MASTER'S THESIS

Eustress instead of Distress

A quantitative investigation into technostress and promoting eustress in IT users.

Burleson, H. (Herman)

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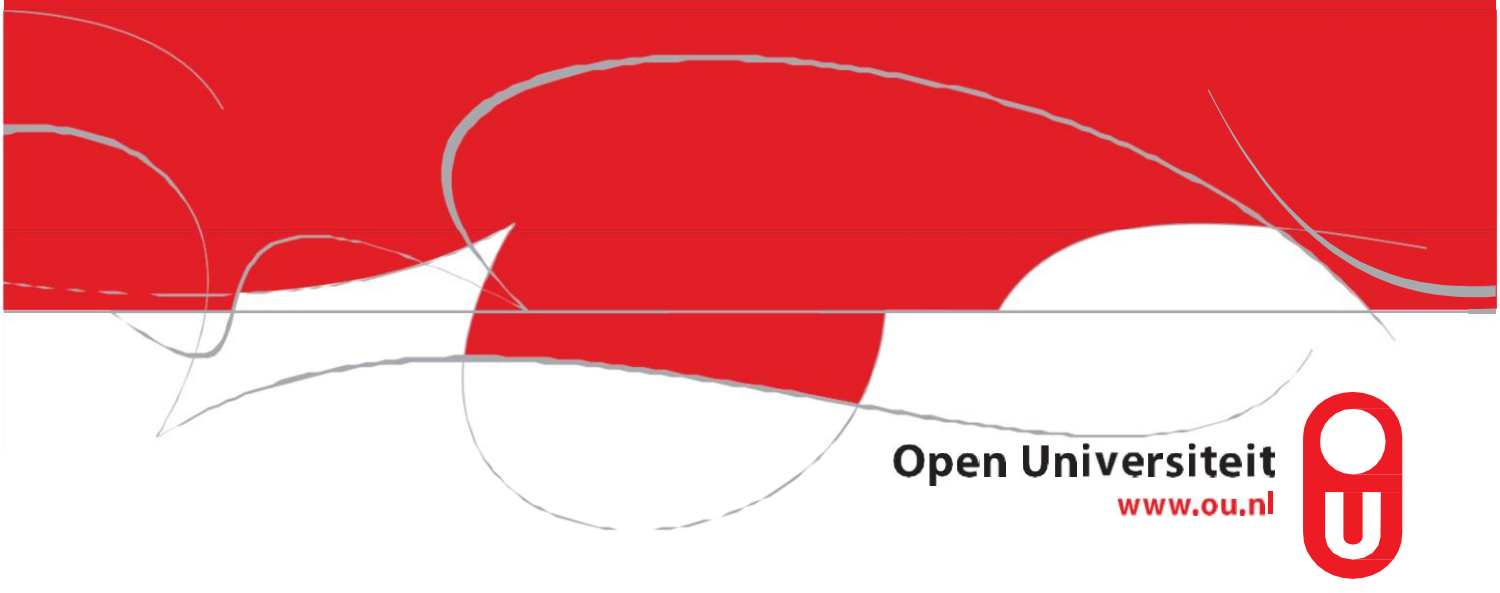

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Eustress instead of Distress:

A quantitative investigation into technostress and promoting eustress in IT users.

Eustress in plaats van Distress:

Een kwantitatief onderzoek naar technostress en het bevorderen van eustress bij IT gebruikers.

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Abstract

Technology related stress or Technostress has mainly been studied as an individual's inability to cope with the effects of using information systems in a healthy way. As such, there are various studies that provide insight into negative technostress or techno distress. The positive effects of information technology use, or techno eustress have not received as much attention. Techno distress is caused by factors related to the characteristics of information systems (technostress creators). Organizations can mitigate these effects with measures aimed at helping users better deal with distress. Contrary to most prior research, this study develops a model to examine the effects of technostress creators and inhibitors on eustress and the intention of users to continue or even expand use of information systems. The study was conducted via a survey in which employees of 4 municipalities in the Netherlands were asked specific questions regarding the subject. A sample of 389 cases was obtained for analysis. Research questions were acquired from earlier studies into the subject to operationalize the developed model. The results show a positive correlation between technostress inhibitors and eustress on intention to continue and expand IS use. The study also shows that user consultation facilitation is a valuable construct in research into technostress inhibitors. Organizations can benefit from these findings by implementing or expanding on technostress inhibitors available to their employees.

Keywords: Technostress, Techno eustress, situational factors, technostress creators, technostress inhibitors.

Summary

The use of information systems (IS) has brought many advantages to both individuals and organizations. The permeation of these systems in society has positive and negative effects. These effects are cumulatively termed technostress. Technostress can lead to a variety of outcomes. The positive outcomes, labeled techno eustress are the subject of this study. It will investigate if situational factors lead to eustress and an intention to continue and expand IS use. These insights lead to better understanding of technostress and enable organizations to promote eustress within IS users. Because eustress has not been extensively studied and it's potential to reduce the effects of negative technostress in individuals and organizations, this is an interesting topic of study. Moreover, no previous studies have been discovered that investigated eustress as a construct within technostress research before. Therefore, the main objective of this study was to contribute towards a to the body of knowledge by providing insight into this gap. The research question was formulated as follows: *"*Do situational factors positively influence eustress in IS users which leads to the user's intention to continue and expand IS use*?"*.

Research method

The research strategy chosen was a survey. The target population was the employees of 4 municipalities in the Netherlands that use IS on a daily basis. A quantitative research design was used to examine the relationships between the variables. An online survey was made available to all employees. In total, a number of 389 cases were analyzed. Technostress creators and technostress inhibitor were the formative constructs used as independent variables. Eustress and intention to continue and expand IS use were reflective constructs used as dependent variables. The study also examined if there was a moderating effect of technostress inhibitors on the relationship between technostress creators and eustress. Apart from the main constructs, control variables age, gender and education were included in the research. All survey questions used were derived from previous research and translated into Dutch.

Main outcomes

The study showed that technostress inhibitors and eustress lead to intention to continue and expand IS use. Technostress creators also negatively impact eustress. Additionally, user consultation facilitation was examined as a technostress inhibitor. It investigates the effects of consulting users before IS are implemented. It proved to be a valid contributor to the construct. Age, education and gender were not confounding factors. The study did not prove that technostress inhibitors lead to eustress.

Conclusions and recommendations

Based on the outcome of the study, it can be concluded that eustress does lead to positive outcomes. Further research into eustress itself is needed. Research is also needed into what promotes eustress in individuals. User consultation facilitation was a valid contributor to this study. As it has not been part of technostress research before, more research into this construct is needed in order to solidify its position in the field of technostress.

Contents

1. Introduction

Information and communication technologies are permeating through modern society, leading to an increasing use of information systems (IS) by individuals, both professionally and privately. The widespread availability of internet connectivity through wireless networking and the drastic decrease in size of mobile devices aids this development. IS are able to deliver data and information anywhere and anytime in order to support businesses and organizations and to aid personal decision making and effectiveness (Diaz, Chiaburu, Zimmerman, & Boswell, 2012; Srivastava, Chandra, & Shirish, 2015; Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007). What is clear is that this is not a temporary development. IS have fundamentally changed organizational structures, business processes and the way individuals interact with each other and the organizations they work for (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008). This phenomenon is bound to have consequences for the individuals using IS. Craig Brod, who was the first to introduce the term technostress, described these consequences as a modern disease of adaptation caused by an inability of individuals to cope with these new IS in a healthy way (Brod, 1984). As research into technostress increased, it continued to focus mainly on the negative aspects (Tarafdar, Cooper, & Stich, 2017)

However, IS use also has positive effects. It can lead to more flexibility and offer a better work – life balance for employees for example and enhance employee creativity (Sun, Hu, & Ding, 2019). In recent years both the positive and negative aspects have been labelled technostress in scientific literature. Technostress is defined as the stress individuals experience due to their use of IS (Tarafdar et al., 2017; Tarafdar, Pullins, & Ragu-Nathan, 2015). Even though it is an umbrella term for all consequences related to IS use, most research conducted to date has focused on the negative consequences, coined techno distress. The positive aspects of technostress, referred to as techno eustress, are greatly understudied (Tarafdar et al., 2017). Techno eustress occurs when stressors are perceived as challenging and instill motivation and a hunger for achievement within an individual (Selye, 1978).

While technostress itself is a fairly recent topic of scientific study, stress as a psychological phenomenon has been widely studied for quite some time. A now widely adopted model developed to understand stress is the transactional model of stress and coping or TMSC (Lazarus & Folkman, 1984). This model describes stress as an interaction between an individual and the environment. The environment places demands on the individual which can be perceived as stress, depending on the individuals capabilities to meet them (Folkman, 2012; Lazarus & Folkman, 1984; Tarafdar et al., 2007). This model is now widely used in research into technostress. The demands placed on the individual by IS are perceived as technostress and require a change which the individual may or may not be able or willing to make. This leads to coping responses, that lead to psychological, physical, and behavioral outcomes (Ayyagari, Grover, & Purvis, 2011; D'Arcy, Herath, & Shoss, 2014; Galluch, Grover, Thatcher, Clemson, & Roanoke, 2015; Ragu-Nathan et al., 2008; Tarafdar et al., 2017).

Technostress research to date has conceptualized the environmental demands into two main categories. The first category are technostress creators which are closely related to the characteristics of IS (Fuglseth & Sørebø, 2014; Ragu-Nathan et al., 2008; Srivastava et al., 2015; Tarafdar et al., 2007; Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2011). The second category are technostress inhibitors which are closely related to situational factors and

conditions (Booker, Rebman, & Kitchens, 2014; Fuglseth & Sørebø, 2014; Lawrence & Low, 1993; Ragu-Nathan et al., 2008). What has not been widely studied so far is how technostress creators and inhibitors relate to techno eustress. A better understanding of this will aid organizations in increasing eustress among IS users. The expectation is that inhibitors will increase the likelihood of individuals appraising IS characteristics as techno eustress, while creators will lead to a decrease. Also, inhibitors are expected to have a moderating effect on the relationship between creators and eustress.

Viewed in light of the transactional model, techno eustress must lead to an outcome. One outcome is the intention of the IS user to extend his or her use of that system (Fuglseth & Sørebø, 2014).

The primary question of this research is to investigate if situational factors positively influence eustress in IS users which leads to the user's intention to continue and expand IS use.

Additionally, this paper contributes by studying the user consultation before IS introduction in organizations. Research to date has studied involvement facilitation and literacy facilitation which both address organizations efforts to aid employees in using existing IS. The potential effects of engaging users before IS are designed and introduced in organizations have not been a part of technostress research to date. If it can be established as a valid technostress inhibitor, this concept could prove a valuable tool in increasing eustress among IS users.

This paper consists of 5 chapters. In the chapter 2 the theoretical foundation for the research will be presented. From the existing literature, hypotheses will be formulated, and a research model will be created. In chapter 3 the research model will be operationalized, and the chosen research method will be explained and motivated. Chapter 4 will provide an overview of the research results. The paper will conclude with chapter 5 which presents a discussion and interpretation of the results and possible implications for practice and further research.

2. Literature review and hypothesis development

The research question and the subject of technostress in general require an investigation into what stress and particularly technostress actually is. Research into Technostress creators and inhibitors is also required. To do so, a literature review of the subject matter was conducted. The literature review was conducted using *"Standing on the shoulders of giants: challenges and recommendations of literature search in information systems research"* (vom Brocke et al., 2015) and *"Using grounded theory as a method for rigorously reviewing literature"* (Wolfswinkel & Wilderom, 2013) as a guide. The article by Vom Brocke especially focused on IS literature research. It outlines an 8-step guide for executing an effective research strategy. Using these guidelines, the research was systematically conducted.

At the start of the research project, the titles of the leading articles on the subject were reviewed. These articles were used to develop a general understanding of the subject matter and to develop useful search queries. The articles were:

- Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: technological antecedents and implications. MIS quarterly, 35(4), 831-858.
- Tarafdar, M., Tu, Q., & Ragu-Nathan, T. S. (2010). Impact of technostress on end-user satisfaction and performance. Journal of Management Information Systems, 27(3), 303-334.
- Tarafdar, M., Cooper, C. L., & Stich, J. F. (2019). The technostress trifecta-techno eustress, techno distress and design: Theoretical directions and an agenda for research. Information Systems Journal, 29(1), 6-42.
- Tarafdar, M., Pullins, E. B., & Ragu-Nathan, T. (2015). Technostress: negative effect on performance and possible mitigations. Information Systems Journal, 25(2), 103-132.

These articles provided the key terminology for developing search the queries used to conduct a systematic search for other relevant articles. They also provided useful references to other relevant articles. During the search articles were selected by first reading the abstract and/or summary. Based on the content of these, articles were selected if the research was on technostress in general and the constructs developed in this research in particular; theory's about stress and stress research were developed; the TMSC was the basis for the research design; Survey questions for the constructs were available. Table 1 provides an overview of the query's used.

Table 1: Overview of search query's and results

Search Query	Filters	#Hits	#Relevant articles	Database
None (articles recommended by team leader)	Not applicable	4	4	Not applicable
"Technostress"	Limit To: Scholarly (Peer Reviewed) Journals Source Types: Academic Journals	12	7	Ebsco host
"Information Technology" AND "coping" AND "model"	Limit To: Scholarly (Peer Reviewed) Journals Source Types: Academic Journals	87	1	Ebsco host
"Information Technology" AND "user" AND "response"	Limit To: Scholarly (Peer Reviewed) Journals Source Types: Academic Journals	979	15	Ebsco host
"Information System" AND "use" AND "Continuance"	Limit To: Scholarly (Peer Reviewed) Journals Source Types: Academic Journals	93	5	Ebsco host
"Technostress" AND "creators"	Limit To: Scholarly (Peer Reviewed) Journals Source Types: Academic Journals	8	4	Ebsco host
"Technostress" AND "inhibitors"	Limit To: Scholarly (Peer Reviewed) Journals Source Types: Academic Journals	5	2	Ebsco host
"Eustress"	Limit To: Scholarly (Peer Reviewed) Journals Source Types: Academic Journals	119	12	Ebsco host
"Information system" AND "intention" "AND" "Use" AND "Continuance"	Limit To: Scholarly (Peer Reviewed) Journals Source Types: Academic Journals	78	9	

"Organizational factors" AND "ICT"	None	35	1	Ebsco host
"Ubiquity" AND "Information systems" NOT "health" NOT "finance" NOT "nursing" NOT "education"	Limit To: Scholarly (Peer Reviewed) Journals Source Types: Academic Journals	77	8	Ebsco host
"Technostress inhibitors"	None	13400	7	Google

2.1. The transactional model of stress and coping

Stress has been the subject of extensive study in the field of psychology. To understand technostress, one must first understand stress. In psychological research, stress has been conceptualized as either a response, a stimulus or a transaction (Papathanasiou, Tsaras, Neroliatsiou, & Roupa, 2015).

When viewed as a response, stress is a medical condition caused by difficult life situations (Selye, 1978). A demand placed on the human body by its environment is defined as stress. This view limits stress to its physical aspects and consequences. The stimulus approach views stress as an external force (a life event or change that demands response, adjustment or adaptation) exerted on an individual, with a reaction as a consequence (Cooper, Dewe, & O'Driscoll, 2003; Holmes, 1978). The stimulus concept differed from the response concept because it considered the fact that a life event could be interpreted as a positive or a negative experience depending on cognitive and emotional factors (Rahe & Arthur, 1978). Secondly, not only physical but also psychological responses or coping mechanisms to the stimuli were considered. Both approaches fail to explain the relationship between the stimulus and the response. Recent studies have adopted the transactional model of stress and coping (Lazarus & Folkman, 1984) when researching technostress and factors that create and inhibit this type of stress (Al-Fudail & Mellar, 2008; Ragu-Nathan et al., 2008). This model presents stress as a product of a transaction between an individual and his or her complex environment. It explains why a certain individual perceives a situation as stressful (as opposed to other individuals) due to the fact that the demands placed on them by environmental stimuli are appraised differently. An individual may or may not have sufficient resources or skills to meet these demands. This creates an imbalance and if so, sets coping responses in motion that lead to behavioral and physiological outcomes. With regards to IS use, stress occurs when the competence required to effectively use a system, exceeds the competence level of the user and thus threatening user well-being. Using the transactional model of stress and coping (TMSC) as a lens through which technostress is viewed, this phenomenon can be described as: *"The presence of "technology situational factors"; which are appraised as demands or techno stressors that challenge individuals, and require a change; which set into motion coping responses or strain; that lead to psychological, physical, and behavioral outcomes."* (Tarafdar et al., 2017, p. 9). Figure 1 provides an overview of the TMSC process.

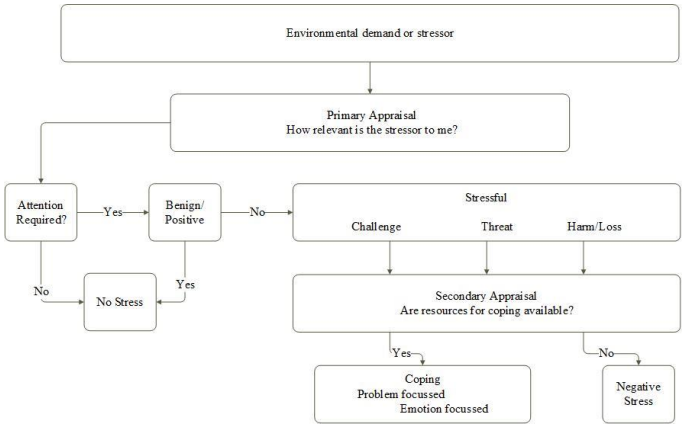


Figure 1. The transactional model of stress and coping.

The words strain and stressors have a negative connotation. This is accentuated by the current state of scientific literature which focuses on the stressors created by IS that are appraised as stressful and lead to negative outcomes (Tarafdar et al., 2017). Although there is a lot of research on the positive aspects of IS, there are a few studies investigating the positive aspects of technostress. In a recent publication, the positive aspects of technostress were named techno eustress (Tarafdar et al., 2017). Eustress occurs when environmental conditions are positively appraised and lead to positive outcomes (O'Sullivan, 2011). Eustress is therefore positive strain experienced by individuals.

There are four major elements within the TMSC, namely stressors, situational factors, strain and outcome (Cooper et al., 2003). Stressors are the conditions present in an environment with the potential to create stress. An example related to IS use is the invasion of one's private life by IS. Situational factors influence the effects of stress and can be positive or negative, for instance computer training or involvement in IS design (Fuglseth & Sørebø, 2014). Strain is defined as psychological and behavioral responses to stressors exhibited by the users of IS. Obvious examples of strain are anxiety, discomfort, uncertainty etc. However, strain can also be positive and produce higher efficiency levels in individuals for instance. Both the positive and the negative responses are referred to as strain. Lastly, outcome is the result of strain, for instance loss in motivation or an increase in productivity (Fuglseth & Sørebø, 2014). This research will investigate the relationship between stressors, positive situational factors, strain and outcome in light of technostress related to IS use, based on the transactional model. In previous research into technostress, stressors have been labelled technostress creators and positive situational factors have been called technostress inhibitors (Ragu-Nathan et al., 2008; Tarafdar et al., 2011). These concepts will be used in this research. With regards to strain, the positive aspects will be studied. This is an aspect of technostress research that has not received much attention. The positive strain construct chosen for this study is techno eustress (O'Sullivan, 2011). It has the potential to lead to positive outcomes such as growth and gain (Crawford, LePine, & Rich, 2010; Fay, Sonnetag, & Frese, 1998). An IS user's willingness to continue using the system and even expand on the use of it is an important and positive outcome, and is a widely used method of measuring information system success (Delone & McLean, 2003). This concept will be used as the outcome concept in this study. Revisiting the description of technostress according to TMSC and in light of techno-eustress, the description within the context of this paper can now be read as:

The presence of stressors and situational factors which are appraised positively, challenge individuals and require a change which is experienced as techno eustress and leads to the IS user's intention to continue and expand IS use.

This description is the basis for conceptualizing the various constructs and drafting hypotheses and the research model.

2.1.1. Technostress creators

The characteristics of IS represent the stressors (Tarafdar et al., 2017) in the transactional model. IS come in many shapes and sizes and serve many purposes. They can exist in hardware form e.g. laptops or mobile phones or software based in the form of applications. Despite this variety, IS share common characteristics. Some of these common characteristics embody the stressors, labelled **technostress creators (TSC)**. Five concepts of technostress creators have been developed in past research (Booker et al., 2014; Ragu-Nathan et al., 2008; Sarabadani, Carter, & Compeau, 2018; Tarafdar et al., 2007). **Techno overload (TOL)** is the concept related to the characteristics of IS driving employees to work faster. IS enable employees to handle different streams of information simultaneously, often more than they are able to handle leading to information and communication overload. **Techno invasion (TIV)** refers to the ability of IS to invade an employee's personal life. IS capabilities of ubiquity and constant connectivity leads to workdays extending into personal time. Employees can be contacted anywhere and at any time causing them to never feel free of technology. **Techno complexity (TCI)** refers to complex computer systems used by employees that force them to spend time and effort learning and understanding how to use new IS and updating their skills. Employees find the variety of these IS and jargon intimidating and as a consequence, feel stressed. **Techno insecurity (TIS)** refers to employees being concerned about losing their jobs to others who have a better understanding of new IS. **Techno uncertainty (TUC)** refers to the short lifecycles of IS. Frequent changes and upgrades don't give employees the opportunity to familiarize themselves with a system. Employees find this unsettling because their knowledge becomes rapidly outdated, and they are required to re-learn skills quickly and often. Technostress creators as described above will be used to represent stressors in this study.

2.1.2. Technostress inhibitors

Positive situational factors are the other part of environmental conditions. These have been conceptualized as **technostress inhibitors (TSI)**. They are the factors that lie within the span of control of an organization. They can be used to influence IS user's technostress experience. The following concepts for technostress inhibitors are recognized in previous studies (Booker et al., 2014; Fuglseth & Sørebø, 2014; Ragu-Nathan et al., 2008; Sarabadani et al., 2018). **Technical support provision (TSP)** refers to the facilitation of employee support within the organization, for instance through a service desk. **Literacy facilitation (LFT)** refers to mechanisms that lead to an increase in knowledge regarding IS use within organizations, for instance through knowledge sharing or training. **Involvement facilitation (IFT)** refers to mechanisms that improve employee engagement with regards to new technology, for instance incentives for using the new technologies. **User consultation facilitation (UCF)** is a concept that has not yet been studied in relationship to technostress. It refers to consulting users regarding new IS before they are acquired and introduced. This concept differs from involvement facilitation because it takes place before a decision regarding introduction of IS, is made. Involvement facilitation occurs during and after introduction of a new IS. Previous research indicates that user's perception of their representation during this phase is a significant contributor to their satisfaction with the

produced system (Lawrence & Low, 1993). It will be useful to investigate whether consulting users also promotes eustress. Technostress inhibitors will be studied as situational factors in this research.

2.1.3. Techno eustress

In order to study the relationship between technostress creators, inhibitors and **Techno eustress (EST)**, a conceptualization of the latter is required. There is no clear, widely accepted definition of techno eustress. Eustress is framed as *''good stress''*. This is related to the law of Yerkes-Dodson, which states that *''increasing stress is beneficial to performance until some optimum level is reached…''* (Le Fevre, Matheny, & Kolt, 2003, pp. 726 - 744). This suggests that individuals who experience a certain level of stress are more productive than they would be if the stress was eliminated from their environment (González-Morales & Neves, 2015; O'Sullivan, 2011). This is consistent with Selye's assertion that eustress occurs when stressors are perceived as challenging and instill motivation and a hunger for achievement within an individual (Selye, 1978). The conceptualization of eustress in a previous study will be used in this research (O'Sullivan, 2011).

Having defined technostress creators and inhibitors, their expected relationships with eustress, based on the transactional theory, leads to the following hypotheses:

Hypothesis 1: Technostress creators experienced by an individual are associated with decreases in techno eustress.

Hypothesis 2: Technostress inhibitors experienced by an individual are associated with increases in techno eustress.

Technostress inhibitors not only affect eustress directly but also affect the relationship between technostress creators and eustress. Inhibitors are designed to aid IS users in effectively working with IS and maximize their usefulness. As such their existence counters the effects of technostress creators. Therefore, technostress inhibitors have a moderating effect on the relationship between technostress creators and eustress (Tu, Ragu-Nathan, Ragu-Nathan, & Tarafdar, 2008). This leads to the third hypothesis:

Hypothesis 3: Technostress inhibitors experienced by an individual moderates the relationship between technostress creators and techno eustress.

2.1.4. Outcome

The final concept is the outcome of the positive appraisal of the technology environmental conditions as described in the transactional model. The ultimate goal would be to maximize the benefits of technostress inhibitors and to minimize the negative effects of technostress creators leading to eustress and resulting in a positive outcome. Research has shown that long term success in IS use is the continued and expanded use of IS rather than the initial use (Bhattacherjee, 2001; Fuglseth & Sørebø, 2014). The intention of employees to continue using IS and even expand on their use of IS is a measure of post adoptive intenstions (Jasperson, Carter, & Zmud, 2005) and users willingness to exploit and and extend IS functionality. It will be useful to investigate whether techno eustress and technostress inhibitors contribute to achieving this outcome. It is expected that both technostress inhibitors and techno eustress will increase employees intention to continue and expand their use of IS. Therefore, User's **intention to continue and expand IS use (ICEIU)** will be studied as the outcome variable in this research.

This leads to the final two hypotheses:

Hypothesis 4: Technostress inhibitors experienced by an individual is associated with increases in employee intention to continue and extend IS use.

Hypothesis 5: Techno eustress experienced by an individual is associated with increases in employee intention to continue and extend IS use.

2.2. Conceptual Model

The concepts and hypotheses culminate in the conceptual model displayed in figure 2, which is the basis for the research design:

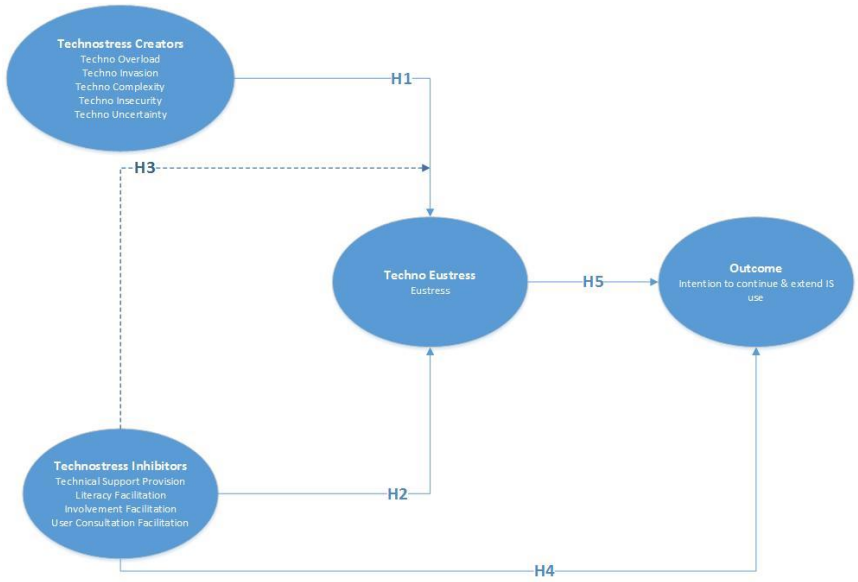


Figure 2. Conceptual model.

3. Methodology

In this chapter, the research method, data collection, data analysis and the tools used to test the hypotheses and answer the research question are presented.

3.1. Research method and design

This research is quantitative in nature as its aim is to use numerical data to test hypotheses. This is done by exploring the relationship between variables by measuring them and analyzing the results using statistical means. This research also studies the causal relationships between the measured variables which also makes it explanatory in nature. To achieve this, a large data pool is required, obtained from many research subjects. The most effective research method to achieve this, is by way of a survey (Saunders, Lewis, & Thornhill, 2016). It would be unfeasible to achieve this using different research methods such as interviews or experiments. In order to obtain data from as much research subjects as possible within a limited time frame, an online survey was selected as the best option. The survey was designed using LimeSurvey which is an online survey tool supplied by the Open Universiteit Nederland. The research was designed as a cross-sectional study. This is a type of observational study design. In a cross-sectional study, the investigator measures the outcome and the exposures in the study participants at a single point in time.

3.2. The survey

The study was carried out within 4 municipalities in the South Holland province of the Netherlands. These municipalities together established one shared service center to administer processes shared among them such as ICT, HR, legal etc. As such all employees of the municipalities and the facilitating organization shared the same ICT resources, rendering it a single organization from the perspective of this study. The respondents were contacted through an invitation email and asked to participate in the survey. Access to the survey was provided through a link in the email (see appendix 1 for the invitation). The only requirement to participate in the survey was employment within the target organization. As the services provided by the IT department were subject of the survey, these employees were excluded. The invitation was sent on May 7th, 2020. Respondents were required to complete it within 3 weeks. As an incentive to participate, participants were entered into a lottery to win one of five bluetooth speakers. Respondents were informed that participation was voluntary, that their answers were given anonymously, and that the data obtained was confidential, only to be used within the context of this research. The results would be shared with the HR department of the organization to assist them in improving employee experience with IS use through the insights gained in the research.

Every survey is at risk of non-response bias. This can occur when survey questions are poorly constructed, the survey takes too long to complete etc. To mitigate for this, measures were taken with the distribution of this survey. The survey questions used were proven effective through use in earlier studies. This ensured that they were easily understood by respondents. The survey is related to the jobs and the employer of the respondents. This increased the likelihood of response due to the survey's possible benefits for the organization and the respondents and an incentive to respond was offered. Social desirability bias is also a concern when using surveys. The chances of this occurring increases when respondents think their answers might be traced back to them. To mitigate for this, respondents were made aware that any information given by them would be treated confidentially. Participation in the survey and the lottery was also voluntary and anonymous.

3.3. Research model operationalization

The research model consists of 4 constructs. These were operationalized in order to measure them. All survey questions used in the questionnaire were extracted from existing questionnaires used in prior scientific research on the subject matter. The only adjustment made was translation from English to Dutch as this better suited the Dutch speaking target population. No English to Dutch translations were found in the literature.

Parallel translation was the technique used for translating the survey questions. The first translation was done by the researcher. The parallel translator has a master's degree in Dutch literature and a good grasp of the English language. There were no major differences between both translations. The wording of the questions was also slightly altered to create consistency in the survey. As they were taken from different sources there were slight inconsistencies in wording. For example, most studies used the word "technology" in their questions. This was substituted with "information system" in this research, as it better suits the research subject. In the survey introduction, participants received an explanation with regards to the meaning of "information system" within the context of the survey. This was also done for the word "organization" (see appendix 4 for a complete overview of the translations and the sources that provided the questions). The survey used a 5-point Likert scale for response options in all questions except for the questions regarding the control variables and the questions designed to mitigate for the effects of the Corona virus measures taken by the government.

3.3.1. Technostress creators and inhibitors

Technostress creators and inhibitors were designed as second order formative constructs. They are formed by 5 and 4 underlying constructs respectively, that that create these concepts. These underlying constructs are first order reflective constructs. This means that the several items per construct have the same meaning and high mutual correlation.

As stated earlier, technostress creators have been widely studied. This was evident in the number of relevant sources found on this subject. The survey questions for Techno Overload, Techno Invasion, Techno Complexity, Techno Insecurity and Techno Uncertainty, were derived from a number of scientific reports on previous studies into the subject (Fuglseth & Sørebø, 2014; Ragu-Nathan et al., 2008; Srivastava et al., 2015; Tarafdar et al., 2015; Tarafdar et al., 2007; Tarafdar et al., 2011). These articles all used the same questions to measure these constructs, baring slight differences in wording here and there. Table 2 provides an overview of the survey questions used.

Table 2: Operationalization of research construct technostress creators

Techno Overload	
TOL_1	Deze informatie systemen dwingen mij veel sneller te werken.
TOL_2	Deze informatie systemen dwingen mij om meer werk te doen dan ik aan kan.
TOL_3	Deze informatie systemen dwingen mij te werken met erg strakke planningen.
TOL_4	Ik moet mijn werkgewoonten veranderen om me aan te passen aan nieuwe informatie systemen.
TOL_5	Mijn workload is veel hoger geworden door steeds ingewikkeldere informatie systemen.
Techno Invasion	
TIV_1	Ik breng minder tijd door met mijn familie vanwege deze informatie systemen.
TIV_2	Door deze informatie systemen moet ik bereikbaar zijn voor werk, zelfs tijdens mijn vakantie.
TIV_3	Ik moet mijn vakantie en weekenden opofferen om bij te blijven met nieuwe informatie systemen.
TIV_4	Ik heb het gevoel dat deze informatie systemen mijn privéleven binnendringen.
Techno Complexity	
TCI_1	Ik weet niet genoeg van deze informatie systemen om mijn werk naar tevredenheid te doen.
TCI_2	Ik heb veel tijd nodig om nieuwe informatie systemen te begrijpen en te gebruiken.
TCI_3	Ik heb niet genoeg tijd om mijn technologische vaardigheden te verbeteren.
TCI_4	Ik vind dat nieuwe collega's meer weten over computer technologie dan ik.
TCI_5	Ik vind nieuwe informatie systemen vaak te ingewikkeld om te begrijpen en te gebruiken.
Techno Insecurity	
TIS_1	Ik heb het gevoel dat mijn werkzekerheid voortdurend wordt bedreigd door nieuwe informatie systemen.
TIS_2	Ik moet mijn vaardigheden steeds verbeteren om te voorkomen dat ik wordt vervangen.
TIS_3	Collega's met betere technologische vaardigheden zijn een bedreiging voor mij.
TIS_4	Ik deel mijn kennis niet met mijn collega's uit angst om te worden vervangen.
TIS_5	Ik heb het gevoel dat er minder kennis wordt gedeeld tussen collega's uit angst om te worden vervangen.
Techno Uncertainty	
TUC_1	Er zijn steeds nieuwe ontwikkelingen in de informatie systemen die we gebruiken binnen onze organisatie.
TUC_2	De computer software binnen onze organisatie verandert steeds.
TUC_3	De computer hardware binnen onze organisatie verandert steeds.
TUC_4	Er zijn regelmatig updates van de computer netwerken binnen onze organisatie.

The questions used in previous studies to investigate technostress inhibitors were also used in this research (Fuglseth & Sørebø, 2014; Ragu-Nathan et al., 2008; Srivastava et al., 2015; Tarafdar et al., 2015; Tarafdar et al., 2007; Tarafdar et al., 2011). All have consistently studied these constructs using the same set of questions. User consultation Facilitation is a new concept introduced in technostress research in this study. Michael Lawrence and Graham Low used this concept in a research project they executed in 1993 (Lawrence & Low, 1993). Table 3 provides an overview of the survey questions used.

Table 3: Operationalization of research construct technostress inhibitors

Literacy Facilitation	
LFT_1	Onze organisatie stimuleert kennisdeling om beter met nieuwe informatie systemen om te gaan.
LFT_2	Onze organisatie legt de nadruk op teamwork bij het omgaan met problemen gerelateerd aan nieuwe informatie systemen.
LFT_3	Onze organisatie biedt gebruikerstrainingen aan voordat nieuwe informatie systemen geïntroduceerd worden.
LFT_4	Onze organisatie bevordert een goede relatie tussen de IT afdeling en eindgebruikers.
LFT_5	Onze organisatie stelt duidelijke handleidingen over het gebruik van nieuwe informatie systemen ter beschikking aan eindgebruikers.
Technical Support Provision	
TSP_1	Onze ICT Servicedesk levert goed werk in het beantwoorden van vragen over informatie systemen.
TSP_2	Onze ICT Servicedesk is goed bemand met deskundig personeel.
TSP_3	Onze ICT Servicedesk is makkelijk bereikbaar.
TSP_4	Onze ICT Servicedesk reageert snel op verzoeken van eindgebruikers.
Involvement Facilitation	
IFT_1	Onze organisatie moedigt eindgebruikers aan om nieuwe informatie systemen uit te proberen.
IFT_2	Onze organisatie beloond eindgebruikers voor het gebruiken van nieuwe informatie systemen.
IFT_3	Onze organisatie betrekt eindgebruikers bij verandering aan of de invoering van informatie systemen.
IFT_4	Onze organisatie raadpleegt eindgebruikers voor de introductie van nieuwe informatie systemen.
User Consultation Facilitation	
UCF_1	Welke van de volgende keuzemogelijkheden beschrijft het best jouw indruk van de **werkelijke** mate van betrokkenheid van eindgebruikers bij het ontwerpen en ontwikkelen van informatie systemen in onze organisatie?
UCF_2	Welke van de volgende keuzemogelijkheden beschrijft het best jouw indruk van de **ideale** mate van betrokkenheid van eindgebruikers bij het ontwerpen en ontwikkelen van informatie systemen in onze organisatie?
UCF_3	Welke van de volgende keuzemogelijkheden beschrijft het best de mate waarin naar jouw mening, de organisatie de eisen en meningen van eindgebruikers heeft begrepen bij het ontwerpen van informatie systemen?
UCF_4	Welke van de volgende keuzemogelijkheden beschrijft het best de mate waarin naar jouw mening, de organisatie serieus rekening gehouden heeft met de eisen en meningen van eindgebruikers bij het ontwerpen van informatie systemen?
UCF_5	Welke van de volgende keuzemogelijkheden beschrijft het best de mate waarin naar jouw mening, de organisatie eindgebruikers heeft geraadpleegd bij het ontwerpen van informatie systemen?

3.3.2. Eustress and intention to continue and expand IS use

Eustress and intention to continue and expand IS use are the strain and outcome constructs in this study. They both are first order reflective constructs meaning they consist of several measurement items of the same meaning and high mutual correlation.

As eustress has not been widely studied previously, a limited number of studies was available with usable survey questions. Geraldine O'Sullivan's measurement scale developed in 2010 was used in this study (O'Sullivan, 2011). Table 4 provides an overview of these questions.

Table 4: Operationalization of research construct techno eustress

Eustress	
EST_1	Hoe vaak kun je effectief het hoofd bieden aan stressvolle veranderingen die optreden op je werk.
EST_2	Hoe vaak ga je succesvol om met irritant werk gerelateerd gedoe.
EST_3	Hoe vaak ben je van mening dat stress positief bijdraagt aan je vermogen om met problemen op je werk om te gaan.
EST_4	Hoe vaak voel je in het algemeen gemotiveerd door stress die je ervaart.
EST_5	Hoe vaak ben je in het algemeen in staat om irritaties op je werk succesvol het hoofd te bieden.
EST_6	Hoe vaak lukt het niet om een taak op je werk te volbrengen als je onder druk staat?
EST_7	Hoe vaak gebeurt het dat je geen controle hebt over de tijd die je besteed aan taken op je werk.
EST_8	Als je stress op je werk ervaart, hoe vaak gebeurt het dat de druk je productiever maakt?
EST_9	Hoe vaak vind je dat je beter presteert bij het uitvoeren van een taak als je onder werk gerelateerde druk staat.
EST_10	Hoe vaak vind je dat stress voor een taak op je werk een positief effect heeft op je eindresultaat.

Intention to continue and expand IS use was the construct selected as the outcome variable. Two prior studies were selected that developed survey questions to measure this construct (Bhattacherjee, 2001; Fuglseth & Sørebø, 2014). The questions developed there were used in this research. Table 5 provides an overview of these questions.

Table 5: Operationalization of research construct intention to continue and extend IS use

Intentions to continue and extend IS use	
ICE_1	Ik ben de intentie om mijn gebruik van informatie systemen in de nabije toekomst voort te zetten.
ICE_2	Ik heb de intentie om mijn gebruik van informatie systemen in de nabije toekomst uit te breiden.
ICE_3	Als het aanbod van informatie systemen in mijn organisatie wordt uitgebreid, heb ik de intentie te onderzoeken hoe ik dit kan benutten.
ICE_4	Ik heb de intentie om te onderzoeken of het mogelijk is om de beschikbare informatie systemen op mijn afdeling beter te gebruiken dan ik nu doe.
ICE_5	Het is mijn intentie is om informatie systemen in de nabije toekomst vaker te gebruiken.

3.4. Control Variables

The following control variables were included in the survey. Because dependent variables may be influenced by factors other than those in the conceptual model, controls were incorporated in the research model to better understand the variance explained by the model. This research controls for various potentially confounding variables. **Age** was not expected to be a factor when measuring technology literacy related concepts (Hudiburg & Necessary, 1996; Rosen & Maguire, 1990). To make sure this is also the case in the studied sample, age is added as a control variable. Age was measured categorically. **Education level** affects technology literacy. Technology is becoming more and more complex and people with a propensity for learning are expected to be better equipped to keep up to date with the complexity and changing nature of technology (Agarwal & Prasad, 1999; Igbaria & Parasuraman, 1989). As this is an important aspect in eustress experience, education is needed as a control variable. Male, female or gender neutral were used to include **gender** as a control variable. Table 6 provides an overview of the questions used to gather this data.

Table 6: Control variables

Control variables	
CVB_1	Wat is je leeftijd 18 to 24 / 25 to 34 / 35 to 44 / 44 to 55 / 55 or older
CVB_2	Wat is je geslacht male / female / gender neutral
CVB_3	Wat is je hoogst voltooide opleiding Basis onderwijs / Middelbaar onderwijs / MBO / HBO / WO
CVB_4	Voor welke organisatie ben je werkzaam Gemeente Leiden / Gemeente Leiderdorp / Gemeente Oegstgeest / Gemeente Zoeterwoude / Servicepunt71
CVB_5	Heb je van je werkgever een Microsoft Surface ontvangen en is dit het primaire systeem dat je gebruikt voor het uitvoeren van je werkzaamheden? Ja / Nee

3.5. Corona pandemic mitigation measures

As this research was being prepared, the Corona pandemic started in December 2019. As it spread through the Netherlands, the Dutch government decided to take a number of measures to halt the spread of the virus (Rijksoverheid, 2020). The most important measure was that employees were required to work from home as much as possible.
Prior to this, part of the research organization's strategy was to provide employees with more flexibility in when and where they work. To achieve this, the organization was in the process of providing employees with a mobile computing device (the Microsoft Surface) and applications that are cloud based with Microsoft 365 as the base platform. Due to the measures of the government, the deployment of these devices and applications was expedited. The possibility that the sudden requirement to work from home, with information systems that were previously unavailable, would affect the answers given, could not be overlooked, considering the nature of the research. Therefore, additional questions were added to be able to control for these effects. As they could not be derived from previous research, they were newly created. Table 7 provides an overview of these questions.

Table 7: Corona pandemic control variables

Corona control variables	
Cor_1	Werk je thuis vanwege de corona maatregelen die door de overheid zijn genomen?
Cor_2	In hoeverre werkte je thuis vóór het ingaan van de corona maatregelen?
Cor_3	Heb je extra middelen (hardware en/of software) ontvangen van je werkgever om het thuiswerken als gevolg van de corona maatregelen mogelijk te maken? Let op: deze middelen had je voor de coronamaatregelen dus niet tot je beschikking.
Cor_4	Ik heb een cursus, training of instructie nodig gehad om met de extra middelen te kunnen werken. Let op: het maakt niet uit of de training door je werkgever is aangeboden of niet.
Cor_5	Er is persoonlijke ondersteuning beschikbaar om de extra middelen die ik heb ontvangen van mijn werkgever, effectief te kunnen gebruiken.
Cor_6	Als ik thuis werk kan ik al mijn werkgerelateerde taken naar tevredenheid uitvoeren.
Cor_7	Als ik thuis werk is de kwaliteit van mijn internetverbinding voldoende om effectief te kunnen werken.
Cor_8	De landelijke corona-uitbraak baart mij veel zorgen.

3.6. Validity and reliability

Before conclusions can be drawn based on a measurement model, the quality of the model needs to be assessed. This will proof that the model functions as intended and is fit for further analysis. The assessment was done by checking the internal consistency reliability, the convergent reliability and the discriminant validity of the model. After calculating the model, it became clear that not all requirements of validity and reliability were met. The following items were deleted in order to create a valid model: TOL4; TIS5; TUC4; LFT3; IFT2; UCF2; EST1, 2, 5, 6,7.

The internal consistency reliability shows to what degree the items of a reflective construct actually measure that construct. Internal consistency reliability in this research is measured by using both Cronbach's alpha and composite reliability. Cronbach's alpha is the conservative measure of the two and usually results in relatively low reliability values (Hair, Hult, Ringle, & Sarstedt, 2013). Composite reliability tends to overestimate internal consistency reliability and usually results in relatively high reliability values. Using both provides a more balanced picture of reliability as the true value usually lies between the two. This means that values ranging from 0.6 to 0.9 are acceptable. For this research, the aim was to achieve values around 0.75 with a cutoff value of 0.6. Item's with a lower value were removed from the model. Convergent validity will be assessed by measuring the average variance extracted (AVE) and an assessment of the outer loadings of the indicators. AVE denotes how much of the variation in an item is explained by the construct. The AVE value should be higher than 0.5 to be acceptable. The outer loadings indicate whether the associate indicators of a construct have much in common. Outer loadings of 0.70 or higher or higher will be considered acceptable (Hair et al., 2013). Loadings with a minimal value of 0.6 will also be acceptable, provided that only a few items have a value below 0.7. Table 8 provides an overview of these measurements.

Table 8: Internal consistency reliability and convergent validity results

Construct	Indicator	Loadings	Cronbach's Alpha	Composite Reliability	AVE
TOL	TOL1	0,822	0,861	0,906	0,708
	TOL2	0,899			
	TOL3	0,854			
	TOL5	0,786			
TIV	TIV1	0,781	0,812	0,876	0,639
	TIV2	0,811			
	TIV3	0,820			
	TIV4	0,784			
TCI	TCI1	0,763	0,860	0,899	0,642
	TCI2	0,860			
	TCI3	0,807			
	TCI4	0,747			
	TCI5	0,824			
TIS	TIS1	0,805	0,810	0,875	0,637
	TIS2	0,803			
	TIS3	0,862			
	TIS4	0,717			
TUC	TUC1	0,808	0,818	0,891	0,732
	TUC2	0,900			
	TUC3	0,857			
LFT	LFT1	0,777	0,768	0,851	0,588
	LFT2	0,727			
	LFT4	0,807			
	LFT5	0,753			
TSP	TSP1	0,857	0,857	0,903	0,701
	TSP2	0,875			
	TSP3	0,752			
	TSP4	0,860			
IFT	IFT1	0,640	0,749	0,861	0,678

	IFT3	0,912			
	IFT4	0,891			
UCF	UCF1	0,791	0,882	0,919	0,740
	UCF3	0,881			
	UCF4	0,879			
	UCF5	0,885			
EST	EST3	0,820	0,900	0,926	0,714
	EST4	0,835			
	EST8	0,845			
	EST9	0,854			
	EST10	0,870			
ICEIU	ICE1	0,708	0,830	0,880	0,595
	ICE2	0,840			
	ICE3	0,790			
	ICE4	0,768			
	ICE5	0,746			

Discriminant validity indicates whether a construct is truly different from other constructs in a model and therefore measures phenomena not measured by the other constructs. It is assessed by examining the cross loadings of the construct items and the Heterotrait Monotrait Ratio (HTMT). When examining cross loadings only values higher than 0.4 are relevant. Where values are higher than 0.4 in relation to items of another construct, the model is at risk (Hair et al., 2013). In order for the model to remain valid, the value of an item examined against itself must be at least 0.1 higher than the value observed when examined against items of another construct. The HTMT values are also observed to establish discriminant validity. HTMT values of the constructs should be lower than 0.9 for the model to be considered valid. Tables 9 and 10 provide an overview of these measurements.

Table 9: Cross loadings

ITEMS	EST	ICEIU	IFT	LFT	TCI	TIS	TIV	TOL	TSP	TUC	UCF
EST3	0,820										
EST4	0,835										
EST8	0,845										
EST9	0,854										
EST10	0,870										
ICE1		0,708									
ICE2		0,840									
ICE3		0,790									
ICE4		0,768									
ICE5		0,746									
IFT1			0,640	0,507							
IFT3			0,912	0,479							0,578
IFT4			0,891	0,412							0,616
LFT1				0,777							
LFT2				0,727							
LFT4			0,498	0,807					0,492		
LFT5			0,447	0,753							
TCI1					0,763						
TCI2					0,860	0,496					
TCI3					0,807	0,425					
TCI4					0,747	0,440					
TCI5					0,824	0,516					
TIS1					0,577	0,805		0,407			
TIS2						0,803					
TIS3					0,470	0,862					
TIS4						0,717					
TIV1							0,781	0,444			
TIV2							0,811	0,401			
TIV3						0,411	0,820				
TIV4							0,784	0,432			
TOL1								0,822			
TOL2							0,476	0,899			
TOL3							0,424	0,854			
TOL5							0,455	0,786			
TSP1									0,857		
TSP2									0,875		
TSP3									0,752		
TSP4									0,860		
TUC1										0,808	

TUC2										0,900	
TUC3										0,857	
UCF1			0,566								0,791
UCF3			0,501								0,881
UCF4			0,512								0,879
UCF5			0,574	0,411							0,885

Table 10: HTMT values

ITEM	EST	ICEIU	IFT	LFT	TCI	TIS	TIV	TOL	TSP	TUC	UCF
EST											
ICEIU	0,209										
IFT	0,079	0,180									
LFT	0,165	0,280	0,746								
TCI	0,144	0,316	0,156	0,224							
TIS	0,148	0,290	0,068	0,079	0,654						
TIV	0,180	0,181	0,144	0,178	0,462	0,497					
TOL	0,157	0,202	0,128	0,160	0,471	0,443	0,622				
TSP	0,073	0,178	0,359	0,481	0,063	0,069	0,104	0,068			
TUC	0,082	0,068	0,142	0,088	0,459	0,294	0,158	0,314	0,144		
UCF	0,139	0,192	0,761	0,515	0,107	0,069	0,083	0,117	0,300	0,048	

3.7. Data Analysis and survey data

In this paragraph, the survey results, data cleaning and data analysis method are discussed.

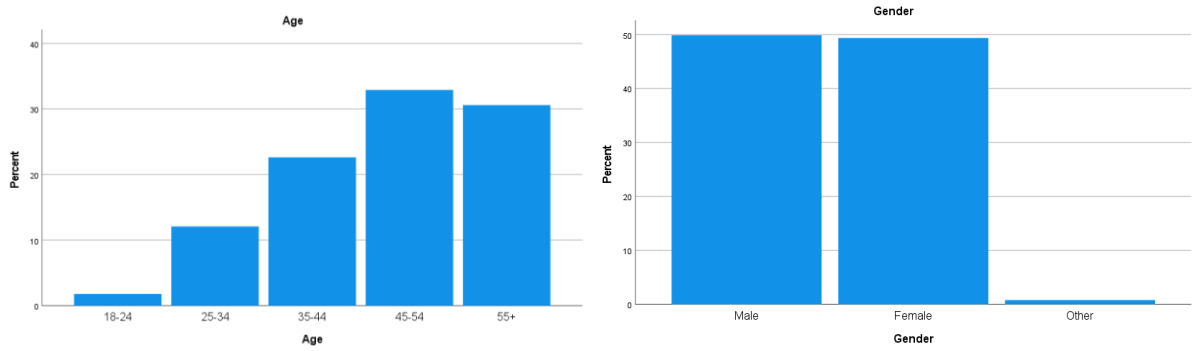
3.7.1. Survey response and data cleaning

The invitation to participate in the survey was sent to all employees of the organization. In total 2392 invitations were sent out. A minimum of 72 respondents were needed for a valid data pool (Hair et al., 2013). 476 invitees started the survey of which 397 completed it. To ensure that every sample weighed equally in the analysis and subsequent results, only completed surveys were selected for analysis.

A common issue with survey research is “straight lining”. This occurs when respondents select the same answer option to every question (Kim, Dykema, Stevenson, Black, & Moberg, 2019). The data was examined for this and no clear evidence of straight lining was found. To further ensure the integrity of the survey data, the speed of completion was also considered in data cleaning. Surveys completed too fast present a risk, as the respondent may not have read the questions carefully or taken the time to seriously consider the answers given. The average time to compete the survey was 14 minutes and 16 seconds. The median was 10 minutes and 54 seconds. To mitigate for this possibility, surveys that were completed in less than 50% of the median were not included in the analyses. This resulted in a total of 389 surveys included in the analyses.

3.7.2. Demographics and descriptive statistics

The demographics of the final sample are shown in figure 3.



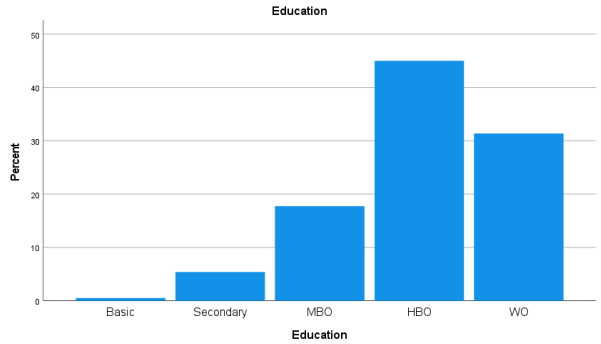


Figure 3. Demographics.

Table 11 shows the mean and the standard deviation of the reflective constructs. Appendix 3 contains an overview of these measures for all the individual survey items.

Table 11: Mean and standard deviation reflective constructs

Reflective Construct	TOL	TIV	TCI	TIS	TUC	LFT	TSP	IFT	UCF	EST	ICEIU
Mean	2,51	2,08	2,32	1,84	3,19	3,29	3,78	2,75	2,50	3,06	3,85
Standard Deviation	0,95	1,01	0,98	0,82	0,91	0,86	0,80	0,89	1,09	0,97	0,80

3.7.1. Data analysis

The responses gathered with the survey were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). It provides a method to analyze latent variables that are indirectly measured by indicator variables (Hair et al., 2013). PLS-SEM is used for complex models containing many associations and enables researchers to analyze both observed and unobserved variables. It combines aspects of factor analysis and regression analysis and supports both reflective and formative constructs. Because of this PLS-SEM is well suited for the type of research conducted in this study. The PLS-SEM model consists of two sub-models: the measurement model and structural model. The measurement model represents the relationships between the observed data and the latent variables and is used to perform validity and reliability assessments as outlined in paragraph 3.6. The structural model represents the relationships between the latent variables. The cleaned survey data was used as input for the model estimation. First, the results of both the measurement and structural model were assessed. Then results were analyzed and interpreted. Finally, conclusions were drawn based on the findings. The SmartPLS 3.0 software package was used to perform the PLS-SEM analysis. SPSS statistics 26 was also used for some additional analyses.

4. Results

The data gathered via the survey was analyzed. The conceptual model as presented in chapter 2 provided the blueprint for the analysis. Some model variations with the purpose of adding data interpretation and a better understanding of the relationships between the measured constructs were also included. As shown in the previous chapter, the conceptual model is valid and reliable. For the variations analyzed, the measurement model assessments with validity and reliability results are presented in the appendices.

Three indicators were used to assess the structural models. The significance of the relationships between the constructs was used to measure statistical significance and to accept or reject hypotheses. T-Values of 1,65, 1,96 and 2,57 were used to indicate 10%, 5% and 1% significance respectively. Only relationships with T-Values of 1,96 or higher were considered significant. The coefficient of determination (R^2) was used to measure the predictive power of the models, with cutoff values of 0,75, 0,50 and 0,25 to indicate substantial, moderate or weak predictive power respectively. Lastly, In addition to evaluating the R^2 values, the change in the R^2 value when a specified construct is left out of the equation, can be used to evaluate whether the omitted construct has a substantial effect on the endogenous constructs. This measure is referred to as the Cohen's f^2, with cutoff values of 0,02, 0,15 and 0,35 indicating small, medium and large effects respectively (Hair et al., 2013).

4.1. Results of the structural model

The cleaned data set was loaded in SmartPLS and SPSS. The model was first assessed without the moderator. The effects of the control variables on the independent variables were taken into account. The survey question design for the control variables was categorical. To use them in SmartPLS they first had to be converted to dummy variables. The dummy variables were included in the model. For age and education, the variables with the lowest number of respondents were left out of the model. Figure 4 provides an overview of the path coefficients, statistical significance and R^2 values.

Figure 4: Structural model without the moderator.

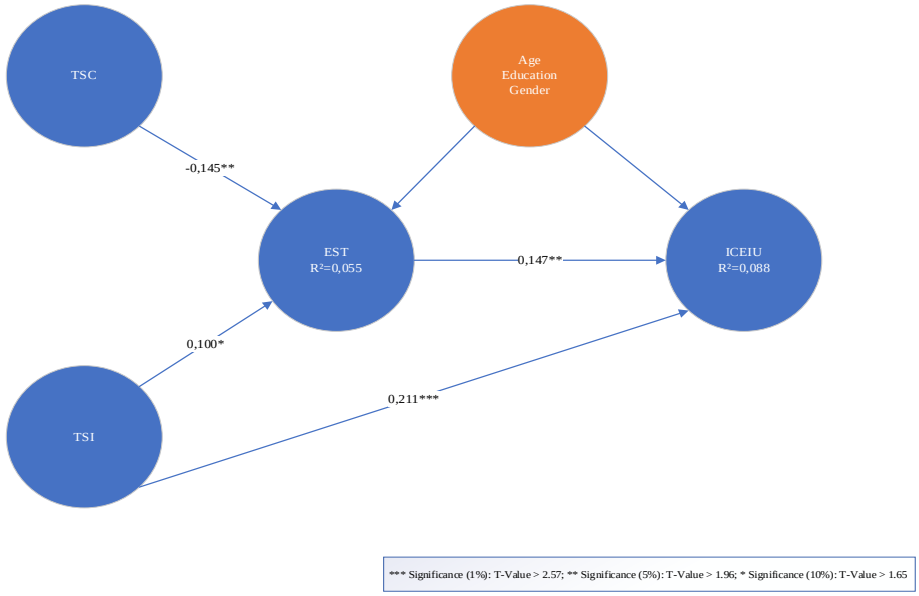


Table 12 provides and overview of T values and f² effect sizes.

Table 12: T-Values & f² structural model without the moderator

Relationship	T values	f²
TSC → EST	2,594	0,020
TSI → EST	1,719	0,010
TSI → ICEIU	3,781	0,047
EST → ICEIU	2,362	0,023

Table 13 provides an overview of the effects of the control variables.

Table 13: path coefficients & T-Values control variables

Path Coefficients			T-Values		
Control variable	**EST**	**ICEIU**	**Control variable**	**EST**	**ICEIU**
35-44	-0,032	-0,005	**35-44**	0,461	0,076
45-54	-0,048	-0,045	**45-54**	0,594	0,553
55+	-0,082	-0,013	**55+**	0,997	0,162
Gender	0,078	0,066	**Gender**	1,451	1,340
HBO	-0,020	0,040	**HBO**	0,198	0,508
MBO	-0,064	0,013	**MBO**	0,759	0,200
WO	0,017	0,101	**WO**	0,165	1,317

**** Significance (1%): T-Value > 2.57; ** Significance (5%): T-Value > 1.96; * Significance (10%): T-Value > 1.65*

The model was then assessed including the moderator as designed in the conceptual model. Figure 5 provides an overview of the path coefficients, statistical significance and R² values.

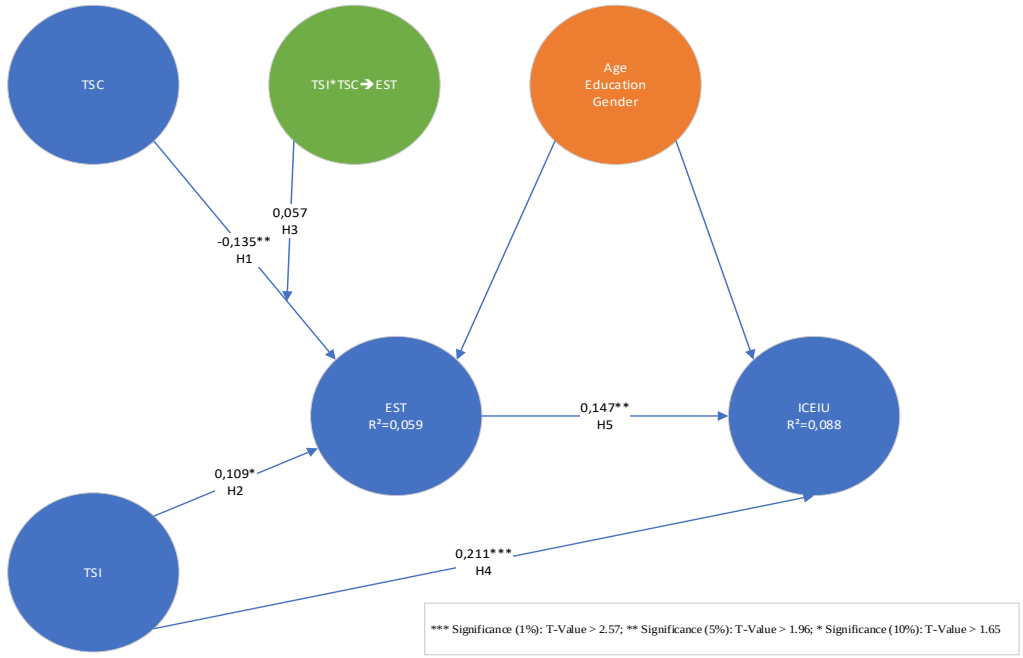


Figure 5: Structural model including the moderator.

Table 14 provides and overview of T values and f² effect sizes.

Table 14: T-Values & f² structural model including the moderator

Relationship	T values	f²
TSC → EST	2,414	0,017
TSI → EST	1,903	0,012
TSI → ICEIU	3,733	0,047
EST → ICEIU	2,291	0,023
TSI*TSC → EST	1,136	0,004

Table 15 provides an overview of the effects of the control variables.

Table 15: path coefficients & T-Values control variables

Path Coefficients			T Values		
Control variable	EST	ICEIU	Control variable	EST	ICEIU
35-44	-0,032	-0,005	**35-44**	0,447	0,075
45-54	-0,043	-0,045	**45-54**	0,544	0,543
55+	-0,079	-0,013	**55+**	0,927	0,166
Gender	0,077	0,066	**Gender**	1,418	1,311
HBO	-0,031	0,040	**HBO**	0,303	0,501
MBO	-0,071	0,013	**MBO**	0,896	0,198
WO	0,006	0,101	**WO**	0,061	1,277

**** Significance (1%): T-Value > 2.57; ** Significance (5%): T-Value > 1.96; * Significance (10%): T-Value > 1.65*

4.2. Contribution of User Consultation Facilitation

As mentioned in chapter 2, UCF is a reflective construct added as an indicator of the formative construct TSI. To assess how UCF contributes to TSI, the weights of all reflective constructs forming TSI were examined (Hair et al., 2013). The values are presented in table 16:

Table 16: Weights reflective constructs in UCF

Construct	Weight
Literacy Facilitation	0,324
Technical Support Provision	0,302
Involvement Facilitation	0,278
User Consultation Facilitation	0,417

4.3. A closer look at inhibitors

To get more insight in the role inhibitors play, an alternative model was used to assess the data. TSI as a formative construct was removed. The direct relationship of the reflective constructs that formed TSI (IFT, LFT, TSP and UCF) with EST was assessed. This was done with all 4 constructs added to the model together (as shown in figure 6) and with each construct added separately. The results are presented in table 17.

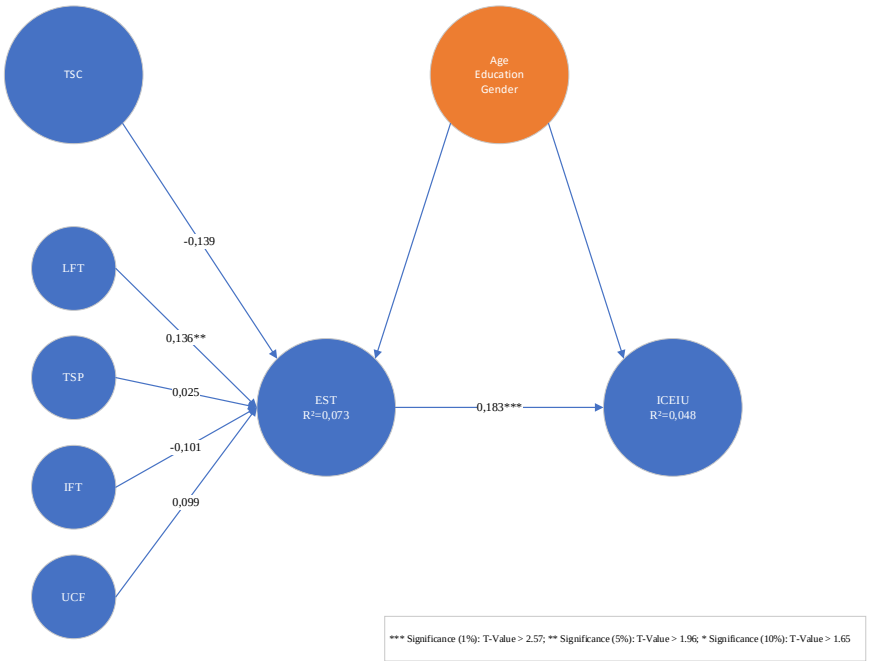


Figure 6: Structural model including the moderator.

Table 17: Relationship between inhibitors and EST

Indicator	Path Coefficient Together	T value together	Path Coefficient Isolated	T value Isolated
LFT	0,136**	2,232	0,151***	2,757
TSP	0,025	0,424	0,072	1,222
IFT	-0,101	1,152	0,025	0,353
UCF	0,099	1,491	0,107**	2,021

**** Significance (1%): T-Value > 2.57; ** Significance (5%): T-Value > 1.96; * Significance (10%): T-Value > 1.65*

4.4. Multigroup analysis

The information gained about demographics provided an opportunity for multigroup analysis to see whether the outcomes were different for certain groups. The data was analyzed for male's vs females, Respondents older than 45 vs younger respondents and respondents that

had a bachelors or master's degree vs the remaining respondents. The results are presented in the tables below.

Table 18: Multigroup analyses gender

Relationship	Path Coefficients Male	Path Coefficients Female	T values Male	T values Female	f² Male	f² Female
TSC → EST	-0,217***	-0,104	2,889	1,406	0,049	0,010
TSI → EST	0,103	0,085	1,148	1,067	0,011	0,007
TSI → ICEIU	0,271***	0,142	3,611	1,648	0,080	0,021
EST → ICEIU	0,133	0,206***	1,387	2,745	0,019	0,045
EST*TSC → EST	0,042	0,095	0,623	1,327	0,003	0,010

**** Significance (1%): T-Value > 2.57; ** Significance (5%): T-Value > 1.96; * Significance (10%): T-Value > 1.65*

Table 19: Multigroup analyses age

Relationship	Path Coefficients 45+	Path Coefficients Younger	T values 45+	T values Younger	f² 45+	f² Younger
TSC → EST	-0,105	-0,266***	1,561	3,048	0,011	0,080
TSI → EST	0,194***	-0,008	2,830	0,079	0,038	0
TSI → ICEIU	0,208***	0,242**	3,072	2,241	0,045	0,064
EST → ICEIU	0,191**	0,180*	2,113	1,864	0,038	0,035
EST*TSC → EST	-0,018	0,214**	0,322	2,454	0	0,050

**** Significance (1%): T-Value > 2.57; ** Significance (5%): T-Value > 1.96; * Significance (10%): T-Value > 1.65*

Table 20: Multigroup analyses education

Relationship	Path Coefficients Ba/Ma	Path Coefficients Other	T values Ba/Ma	T values Other	f² Ba/Ma	f² Other
TSC → EST	-0,138**	-0,093	2,560	0,699	0,019	0,009
TSI → EST	0,083	0,297**	1,294	2,437	0,007	0,089
TSI → ICEIU	0,196***	0,333***	2,916	3,091	0,041	0,116
EST → ICEIU	0,168**	0,115	2,469	0,843	0,030	0,014
EST*TSC → EST	0,112	-0,077	1,832	1,038	0,014	0,012

**** Significance (1%): T-Value > 2.57; ** Significance (5%): T-Value > 1.96; * Significance (10%): T-Value > 1.65*

4.5. The Corona pandemic

The measures taken by the Dutch government to contain the spread of the corona virus had a great impact on people in the Netherlands (Rijksoverheid, 2020). This made it necessary to assess what the impact of these measures was on the sample population and if this had an effect on the results of the research. The Corona control questions were added to the survey for this purpose. Table 21 gives some descriptive statistics about this question group.

Table 21: Descriptive statistics corona pandemic survey items

Item	Mean	Standard deviation
COR_1	4,62	0,756
COR_2	2,4	0,968
COR_3	1,81	0,752
COR_4	4,55	2,446
COR_5	5,26	1,792
COR_6	3,93	1,045
COR_7	4,21	0,961
COR_8	3,44	0,963

One of the most impactful measures was that working from home quickly became the norm. The survey also confirmed this. The respondents answered that they worked from home rarely to sometimes on average before the pandemic (COR_2). This changed to often to always on average after the pandemic (COR_1). However, working from home did not affect the execution of their duties greatly. Both questions regarding the execution of work-related tasks (COR_6) and the quality of the available internet connection (COR_7) show high satisfaction in these areas. 27% of respondents answered that they received additional hard and software to be able to work from home (COR_3). Results regarding support (COR_5) or

education (COR_4) they needed due to the additional IS they received, were inconclusive as the number of respondents receiving additional hard and software did not match the number of respondents that recorded an answer to these questions. The respondents general concern regarding the pandemic (COR_8) was in line with the national average at the time of the survey (RIVM, 2020).

Two effects stand out for this sample that could affect technostress perception. The majority started working from home, but this did not affect their work performance and 27% of the sample received additional IS due to the pandemic. The latter presented the more interesting option to analyze. To assess how this group fit the model, group analysis was performed. The group that received extra IS was isolated and the model was calculated for this group only. The results are presented in table 22. The effects of the control variables did not change when compared to the whole sample.

Table 22: T-Values & effect sizes group analysis

Relationship	Path Coefficients	T values	f²
TSC → EST	-0,032	0,281	0,001
TSI → EST	0,135	1,329	0,017
TSI → ICEIU	0,316***	3,199	0,109
EST → ICEIU	0,183	1,802	0,038
EST*TSC → EST	0,010	0,108	0

**** Significance (1%): T-Value > 2.57; ** Significance (5%): T-Value > 1.96; * Significance (10%): T-Value > 1.65*

5. Conclusions, discussion and recommendations for practice & research

This section will interpret the study's results and how they relate to the literature. Application of the findings in practice will be discussed as well as recommendations for further research.

5.1. Conclusions

5.1.1. Conclusions regarding the model and hypotheses

The predictive value of the conceptual model is weak: 5,9% of the variance in EST can be predicted by TSC and TSI (R^2 = 0,059) and 8,8% of the variance in ICEIU can be predicted by EST and TSI (R^2=0,088). The impact of TSI and EST on ICEIU was small (f^2 of 0,047 and 0,023 respectively). The impact of the other relationships was negligible. Omitting the moderating effect from the model has no effect, apart from a slight improvement in effect size for the relationship between TSC and EST.
The outcome with regards to the hypotheses is shown in table 23.

Table 23: Hypotheses results

Hypothesis	Result
Hypothesis 1	Accepted
Hypothesis 2	Rejected
Hypothesis 3	Rejected
Hypothesis 4	Accepted
Hypothesis 5	Accepted

Hypothesis 1
The model shows a significant, negative correlation between TSC and EST. Based on this outcome, hypothesis 1 is accepted. Previous research provides a mixed view of this relationship. Some studies show a significant negative correlation (Fuglseth & Sørebø, 2014)

while others show no significant correlation between TSC and a positive strain outcome, with TSI as the second independent variable and a moderator in place (Tu et al., 2008). Those studies did not use eustress as the positive strain outcome so no definitive comparison with literature can be made. The model without the moderator produces the same result. This finding is consistent with previous research where the moderator is not introduced to the model and the effect of TSC on a positive strain outcome was assessed (Booker et al., 2014; Tu et al., 2008).

Hypothesis 2

The model shows no significant correlation between TSI and EST. Based on this outcome, hypothesis 2 is rejected. Previous research had shown that inhibitors positively correlate with a positive strain variable (Booker et al., 2014; Fuglseth & Sørebø, 2014). Even though these previous studies did not use eustress as the positive strain variable, this result was not expected.

Hypothesis 3

The model shows no significant moderating effect of TSI on the relationship between TSC and EST. Based on this outcome, hypothesis 3 is rejected. This outcome is in line with previous research where the moderating effect of TSI on the relationship between TSC and a positive strain variable was analyzed (Fuglseth & Sørebø, 2014; Tu et al., 2008). To get more clarity on the moderating effect, the sample was also analyzed using SPSS. This software provides a useful way of displaying these results as can be seen in figure 7:

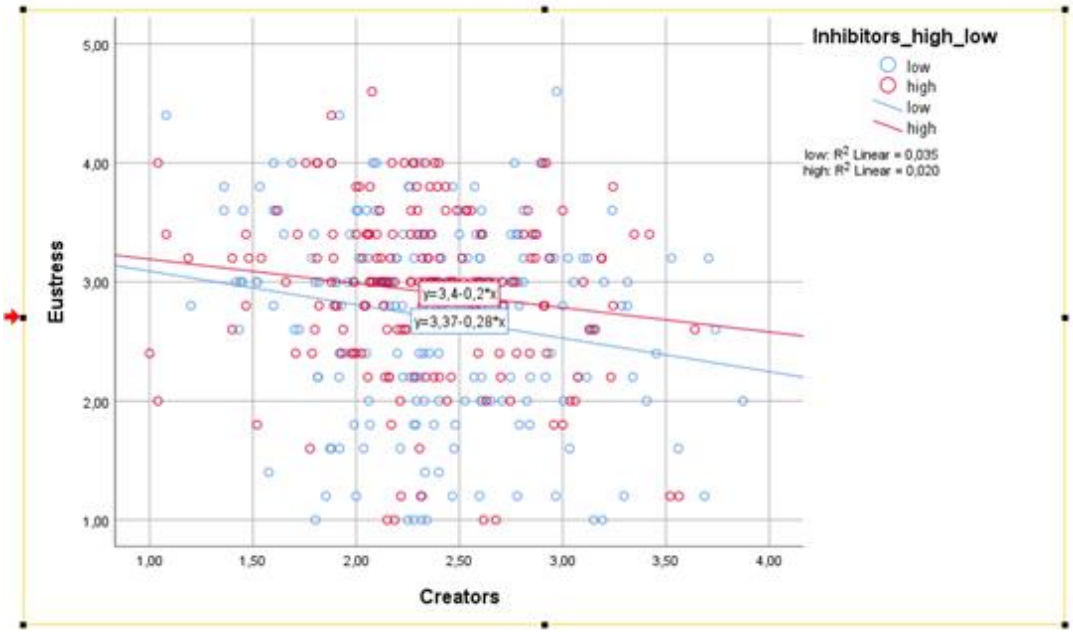


Figure 7: The correlation between technostress creators and eustress when moderated by technostress inhibitors.

The red dots represent the respondents with a TSI score higher than the mean and the red line represents the regression line which predicts the change in EST when TSC changes for respondents (with a high level of TSI). The blue dots and line do the same for respondents with a low score on TSI. For both groups, TSC has a negative effect on EST. As TSC increases, EST decreases. What the data also shows is that this negative effect is stronger for

respondents with a TSI score lower than the mean. In Respondents with a TSI score higher than the mean, the negative effect is not as strong. This indicates that there is a moderating effect of TSI on the relationship between TSC and EST within this sample. However, this effect is not statistically significant, which means it is not representative for the population.

Hypotheses 4 and 5
In both variations of the model, significant, positive correlations were found between TSI and EST on ICEIU. Based on this outcome, hypotheses 4 and 5 are accepted.
With regards to hypothesis 4, the result is not in line with previous findings (Fuglseth & Sørebø, 2014). Comparing the sample population shows similarity with regards to education. In both studies, more than 70% of respondents had at least a college degree. However, the population in this study was evenly spread with regards to gender, whereas the sample used by Fuglseth et.al. was 71% female. Multigroup analysis in this study shows that there is a positive effect of TSI on ICEU in males. This effect is not present in females. This difference could be a possible explanation for the difference in the overall findings. As the correlation between EST and ICEIU has not been investigated before based on the literature studied, no statement can be made about how the result regarding hypothesis 5 relates to previous research. However, the result was expected based on the framing of eustress as ‘‘good stress’’ (Le Fevre et al., 2003, pp. 726 - 744) and the assertion that eustress occurs when stressors are perceived as challenging and instill motivation and a hunger for achievement within an individual (Selye, 1978).

Lastly, the results showed that age, education and gender were not confounding factors. It was expected that higher education levels would have a positive effect on technostress perception. There was no support for this in the data as the main effects did not change when controlling for education. (Agarwal & Prasad, 1999; Igbaria & Parasuraman, 1989; Ragu-Nathan et al., 2008). In previous literature, EST was not used as the strain variable. The researchers also controlled on TSC and not on strain and/or outcome. That could explain the difference. The expectation for higher age levels was that this would not have an effect on technostress perception (Ragu-Nathan et al., 2008). This was indeed supported by the data. Gender was also not a confounding factor in this study. This is in line with previous research (Fuglseth & Sørebø, 2014; Ragu-Nathan et al., 2008).

5.1.2. Conclusions regarding user consultation facilitation

The second objective was to investigate the contribution of user consultation facilitation as a reflective construct to TSI. It measures respondent’s opinion regarding involvement prior to the implementation of IS. Because involvement facilitation measures the same but during implementation, it would not have been surprising if validity and reliability issues arose during structural model assessment. However, this was not the case. Assessment of the weights proved that its contribution to TSI is also substantial. UCF has not been used in technostress research before so no statement can be made regarding this outcome in comparison to previous research. To be formally accepted as a new measurement item, more tests are needed but the results are promising.

5.1.3. Conclusions regarding inhibitors

The data shows a significant relationship between EST and ICEIU. However, the data does not show a significant relationship between TSI and EST, meaning that the research failed to

predict what causes eustress. This result was disappointing. To get a more detailed look at the reflective constructs that formed TSI, an alternative model design was used as explained in paragraph 4.3. The results show that LFT and UCF have significant, positive correlations with TSI. LFT shows this effect when added to the model together with the other reflective constructs and when added separately. UCF shows this effect only when added separately. This shows that educating users regarding use and benefits of IS and consulting them before IS are acquired and implemented can lead to eustress. No literature was found prior to the research of studies that examined these relationships. Therefore, no statement can be made whether this result was expected or not.

5.1.4. Conclusions regarding multigroup analyses

The results of the multigroup analyses performed vary. This is not surprising when examining previous research. The findings seem to be design, context and sample specific which makes it hard to draw general conclusions. This is enhanced by the fact that some of the constructs used in this research, were rarely used previously which makes comparing results difficult. The conclusions that could be drawn from the differences between the groups in this research, will be presented in this section. Compared to the conceptual model, only the group with a bachelors or master's degree shows the same result. This is not surprising as this group represents 76% of the total sample.

Gender

With regards to gender the analysis shows that TSC influences EST significantly in males and not in females. Prior research has shown that males experience more technostress than females (Ragu-Nathan et al., 2008; Tarafdar et al., 2011), which supports this finding, while other research claims the opposite (Ahuja & Thatcher, 2005; Booker et al., 2014). Therefore, no statement van be made whether this finding is in line with theory. TSI has a significant effect on ICEIU in males and not in females. In previous research where females were overrepresented, this result was not achieved (Fuglseth & Sørebø, 2014) even though no multigroup analysis was reported in that study, so no definitive comparison can be done. Lastly, EST has a significant effect on ICEIU in females and not in males. This relationship has not been subject of prior study but in a sample with female overrepresentation there was a significant effect of the positive strain variable on ICEIU (Fuglseth & Sørebø, 2014). However, this result was also achieved for the total sample in this study, where males and females were evenly represented, so no definitive conclusions can be drawn here.

Age

TSC has a significant effect on EST in younger respondents. This effect was not present in older respondents. This is consistent with previous findings that older people experience less technostress (Ragu-Nathan et al., 2008; Tarafdar et al., 2011). Other studies showed that older people experience more technostress (Booker et al., 2014; Morris, Venkatesh, & Ackerman, 2005). Therefore, no statement van be made whether this finding is in line with theory. There is a positive and significant effect between TSI and EST and between EST and ICEIU in respondents in the age group of 45 years or older. Younger respondents show no significant correlation. This suggests that older people respond better to inhibitors and are prepared to continue and expand IS use when experiencing eustress contrary to younger respondents. The fact that more than 60% of the sample was over 45 could be an explanation for this. Prior research was not conclusive on this finding.

Education

The analysis shows that TSC has a significant negative effect on EST in respondents with higher education compared to the rest of the sample. Prior literature was found the opposite so this result was not expected (Ragu-Nathan et al., 2008; Tarafdar et al., 2011), especially since 76% of the studied sample was highly educated. Respondents with lower education levels also show a significant correlation between TSI and EST which suggests they are more receptive to situational factors. However, no support for this was found in literature. Lastly, the effect of EST on ICEIU is significant when education levels are high. This could be caused by the high education level of the sample. Again, in this case, prior literature was inconclusive.

5.1.5. Conclusions regarding the effect of the Corona Pandemic

The Corona pandemic is a unique occurrence in our time so prior literature in connection to technostress does not exist. However, the results were not expected. 27% of respondents fall within the group that was separately analyzed. 68% was highly educated compared to 76% for the total sample, but still a considerable majority. 52 were male and 54 were female which is in line with the total sample. 68% was over 45 years of age compared to 63% in the total sample. These differences are small, yet the model's results are completely different. Only the relationship between TSI and ICEIU is the same compared to the results of the whole sample. No conclusions could be drawn regarding the reason for this based on the available data. What was expected for this group was an increase in technostress. The relationship between TSC and EST was expected to be highly significant with a considerable path coefficient. The fact that this was not the case proves that this effect of the Corona measures had no effect on the sample population and the results of the study. The fact that 73% of the sample did not need additional IS to work from home also greatly contributes to this.
No separate analysis was done with regards to working from home becoming the norm. The data showed that respondents experienced no negative effects with regards to performing their work-related tasks or internet connection.

5.1.6. Conclusion regarding the research question

The main question for this research was: can situational factors promote eustress in IS users and lead to intention to continue and expand IS use. Based on the results, one can conclude that this does not hold true. The research shows that situational factors and eustress lead to positive outcomes, but situational factors don't promote eustress.

5.2. Discussion and recommendations for practice & research

This study contributes to the body of knowledge as it provides a better understanding of the roll of eustress in organizations with regards to IS use. As eustress is greatly understudied, these insights are especially valuable. Various studies have examined the effects of inhibitors and creators on a positive strain variable, but to this point, eustress was never selected as that variable. The main findings, that situational factors and eustress can positively affect the intention to continue and expand IS use are encouraging. They are in line with and support the current state of technostress theory which expects technostress inhibitors and positive strain to lead to positive outcomes. There are not many studies available that investigated these correlations, so no definitive conclusions can be drawn yet. Further research is needed for a clearer picture, especially with regards to eustress and how it relates to a positive outcome. With regards to practice, technostress creators exist mostly outside of an organization's sphere of influence. They are characteristics directly tied to or caused by IS themselves. Situational factors can be influenced by organizations and therefore provide a

valuable tool to promote a positive outcome. The elements that form situational factors are clear. What is also clear is that they are not difficult to implement and are already in place in most organizations. Therefore, organizations can use these outcomes to their benefit by implementing and/or strengthening situational factors in order to reap the benefits they provide to their employees. The fact that eustress as a construct has not been fully developed yet by previous research could be an explanation for the absence of a significant correlation between inhibitors and eustress. As eustress positively correlates to the desired outcome, this was disappointing because the model failed to explain what promotes eustress. Eustress could only be examined as a reflective construct. Of the 10 items used to measure eustress, 5 had to be removed to create a reliable and valid model. This is an indication that eustress research is still in its infancy. The findings of positive correlations between literacy facilitation and user consultation facilitation and eustress show that this path is promising and need not be abandoned yet. Further research into eustress, mainly to develop constructs to measure it better is needed. Further research into what leads to eustress is also required. This is necessary to be able to promote eustress in practice. For practice, the results regarding the effects of the reflective constructs on eustress provide valuable insight. Organizations can use these finding to focus on education and user involvement in early stages to enhance their success when implementing IS. In line with theory, situational factors did not moderate the effect of technostress creators on the positive strain variable. Further research into why the moderator is not significant, contrary to expectations could be useful but it is doubtful that it will lead to a different outcome. For practice, the findings show that high levels of inhibitors experienced by individuals cause a reduction in the effects creators have. Situational factors can be used by organizations to lessen the effect of creators. The study confirmed previous findings regarding the correlation between technostress creators and eustress. For theory, this solidifies the findings and it is doubtful that further research will produce different results. In practice, there is little that can be done about creators directly as they are tied to the characteristics of IS. Wat organizations can do is gain a deeper understanding of creators and use inhibitors to lessen their effect. For instance, by providing a deeper understanding to employees about creators and tools to deal with the negative effects. This can be done through literacy facilitation for instance. User involvement when implementing new IS also proved useful. The conceptual model showed that user consultation facilitation was a reliable and valid construct in forming inhibitors. The alternative model showed that it is one of the 2 constructs that do have a significant and positive correlation with eustress. This justifies further research into this construct to solidify it as an inhibitor. For practice, organizations can use this knowledge to focus more on involving their employees in the process of introducing IS before the systems are selected and give them an active role in systems development. Age, education and gender were not confounding factors in this study. No study is exactly the same and sample populations will also differ. For theory this means that control variables should always be considered when interpreting data. For practice, this means that demographics can have an effect on measures implemented to deal with technostress and organizations should take this into consideration when planning for their implementation, for instance by reviewing previous studies on the topic with similar demographics and context.

With regards to limitations of this study, it was conducted in a limited setting within 4 municipalities that operated as one with regards to IS. This means the findings may not be generalized across other sectors. Further research is needed to confirm the validity of the findings across different domains such as commercial organizations and NGO’s. Lastly, future research needs to consider longitudinal studies that measure the relationships between

technostress creators, inhibitors, eustress and the intention to continue and expand IS use over time.

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Appendix 1: Survey invitation

Onderwerp: Onderzoek naar ICT innovatie → maak kans op een bluetooth speaker!

Beste collega,
Weer een update? Weer een nieuw systeem? Geen vaste telefoon meer? ICT-vernieuwingen komen in deze tijd steeds meer voor. Je hebt er misschien zelf wel mee te maken gehad. Grote kans gezien de transitie van onze organisatie naar meer tijd en plaats onafhankelijk werken. Ik wil de effecten hiervan onderzoeken door middel van een enquête.

Vul de enquête in! Het duurt maximaal 15 minuten en **maak kans op een van de 5 bluetooth speakers!**

Hoe kun je meedoen?
De enquête gaat over de effecten van informatie systemen op eindgebruikers in organisaties. Je kunt het online invullen door op deze link te klikken:

[link naar enquete].

Jouw bijdrage helpt! Invullen kan tot [datum]. Daarna vervalt jouw kans om een van de Bluetooth speakers te winnen!

Wat gebeurt er met de resultaten?
Die gebruik ik voor mijn afstudeeronderzoek naar effecten van informatiesystemen op eindgebruikers in organisaties. Daarnaast zullen de inzichten hieruit door onze organisatie meegenomen worden in volgende ontwikkelingen.

Is het anoniem?
Ja. Persoonsgegevens worden niet geregistreerd. De antwoorden zijn niet herleidbaar naar een persoon.

Ben je verplicht mee te doen?
Natuurlijk niet! Ik zou het wel ontzettend fijn vinden als je besluit wel mee te doen!

Is het nuttig?
Ja, het is ongelooflijk nuttig dat je de enquête invult. Het helpt mij enorm bij mijn onderzoek en uiteindelijk is de organisatie er ook mee geholpen.

Meer over mij
Ik ben Herman Burleson. Ik werk bij Servicepunt 71 en daarnaast doe ik de opleiding Business process management en ICT. Mijn doel is voor deze zomer af te studeren, zodat ik verder lekker kan racefietsen met het mooie weer. :) Maar daarvoor moet ik dus eerst dit onderzoek afronden.

Heel veel dank voor het invullen!

Appendix 2: Validity and reliability results alternative models

Model including all constructs

In order to create a valid model, the following items had to be removed: TOL4; TIS5; TUC4; LFT3, 5; TSP1; IFT1; UCF2; EST 1, 2, 5, 6, 7; ICE1.

Internal consistency reliability and convergent validity results

Construct	Indicator	Loadings	Cronbach's Alpha	Composite Reliability	AVE
TOL	TOL1	0,822	0,861	0,906	0,708
	TOL2	0,899			
	TOL3	0,854			
	TOL5	0,786			
TIV	TIV1	0,781	0,812	0,876	0,639
	TIV2	0,811			
	TIV3	0,820			
	TIV4	0,784			
TCI	TCI1	0,763	0,860	0,899	0,642
	TCI2	0,860			
	TCI3	0,807			
	TCI4	0,747			
	TCI5	0,824			
TIS	TIS1	0,805	0,810	0,875	0,637
	TIS2	0,803			
	TIS3	0,862			
	TIS5	0,717			
TUC	TUC1	0,808	0,818	0,891	0,732
	TUC2	0,900			
	TUC3	0,857			
LFT	LFT1	0,875	0,741	0,850	0,654
	LFT2	0,813			
	LFT4	0,721			
TSP	TSP2	0,789	0,809	0,882	0,714
	TSP3	0,892			
	TSP4	0,850			
IFT	IFT2	0,749	0,741	0,850	0,654
	IFT3	0,839			
	IFT4	0,834			
UCF	UCF1	0,732	0,882	0,917	0,735
	UCF3	0,894			
	UCF4	0,905			
	UCF5	0,887			
EST	EST3	0,819	0,900	0,926	0,714
	EST4	0,833			
	EST8	0,847			
	EST9	0,853			
	EST10	0,870			
ICE	ICE2	0,847	0,828	0,885	0,659
	ICE3	0,769			
	ICE4	0,802			
	ICE5	0,826			

HTMT Values

Construct	EST	ICEIU	IFT	LFT	TCI	TIS	TIV	TOL	TSC	TSP	TUC	UCF
EST												
ICEIU	0,216											
IFT	0,080	0,150										
LFT	0,190	0,284	0,655									
TCI	0,144	0,276	0,167	0,192								
TIS	0,148	0,228	0,053	0,066	0,654							
TIV	0,180	0,132	0,124	0,203	0,462	0,497						
TOL	0,157	0,147	0,147	0,140	0,471	0,443	0,622					
TSC	0,196	0,239	0,170	0,195	0,915	0,861	0,818	0,833				
TSP	0,089	0,136	0,312	0,461	0,061	0,076	0,103	0,054	0,112			
TUC	0,082	0,048	0,120	0,096	0,459	0,294	0,158	0,314	0,620	0,139		
UCF	0,139	0,166	0,731	0,518	0,107	0,069	0,083	0,117	0,119	0,298	0,048	

Cross loadings

Cross Loadings	EST	ICEIU	IFT	LFT	TCI	TIS	TIV	TOL	TSC	TSP	TUC	UCF
EST3	0,819											
EST4	0,833											
EST8	0,847											
EST9	0,853											
EST10	0,870											
ICE2		0,847										
ICE3		0,769										
ICE4		0,802										
ICE5		0,826										
IFT2			0,749									
IFT3			0,839	0,424								0,565
IFT4			0,834									0,603
LFT1				0,875								
LFT2				0,813								
LFT4			0,467	0,721						0,446		
TCI1					0,763				0,601			
TCI2					0,860	0,496			0,713			
TCI3					0,807	0,425			0,673			
TCI4					0,747	0,440			0,577			
TCI5					0,824	0,516			0,710			
TIS1					0,577	0,805		0,407	0,704			
TIS2						0,803			0,541			
TIS3					0,470	0,862			0,621			
TIS4						0,717			0,487			
TIV1							0,781	0,444	0,565			
TIV2							0,811	0,401	0,521			
TIV3						0,411	0,820		0,584			
TIV3						0,411	0,820		0,584			
TIV4							0,784	0,432	0,564			
TOL1								0,822	0,564			
TOL2							0,476	0,899	0,652			
TOL3							0,424	0,854	0,601			
TOL5					0,457		0,455	0,786	0,671			
TSP2										0,789		
TSP3										0,892		
TSP4										0,850		
TUC1											0,808	
TUC2									0,428		0,900	
TUC3									0,462		0,857	
UCF1			0,504									0,732
UCF3			0,461									0,894
UCF4			0,461									0,905
UCF5			0,522									0,887

Model with Literacy Facilitation

In order to create a valid model, the following items had to be removed: TOL4; TIS5; TUC4; LFT3, 5; EST 1, 2, 5, 6, 7; ICE1.

Internal consistency reliability and convergent validity results

Construct	Indicator	Loadings	Cronbach's Alpha	Composite Reliability	AVE
TOL	TOL1	0,822	0,861	0,906	0,708
	TOL2	0,899			
	TOL3	0,854			
	TOL5	0,786			
TIV	TIV1	0,781	0,812	0,876	0,639
	TIV2	0,811			
	TIV3	0,820			
	TIV4	0,784			
TCI	TCI1	0,763	0,860	0,899	0,642
	TCI2	0,860			
	TCI3	0,807			
	TCI4	0,747			
	TCI5	0,824			
TIS	TIS1	0,805	0,810	0,875	0,637
	TIS2	0,803			
	TIS3	0,862			
	TIS5	0,717			
TUC	TUC1	0,808	0,818	0,891	0,732

	TUC2	0,900			
	TUC3	0,857			
LFT	LFT1	0,874	0,729	0,847	0,649
	LFT2	0,813			
	LFT4	0,723			
EST	EST3	0,829	0,900	0,926	0,714
	EST4	0,838			
	EST8	0,843			
	EST9	0,846			
	EST10	0,868			
ICE	ICE2	0,848	0,828	0,885	0,659
	ICE3	0,769			
	ICE4	0,802			
	ICE5	0,826			

HTMT Values

Construct	EST	ICEIU	LFT	TCI	TIS	TIV	TOL	TSC	TUC
EST									
ICEIU	0,216								
LFT	0,190	0,284							
TCI	0,144	0,276	0,192						
TIS	0,148	0,228	0,066	0,654					
TIV	0,180	0,132	0,203	0,462	0,497				
TOL	0,157	0,147	0,140	0,471	0,443	0,622			
TUC	0,082	0,048	0,096	0,459	0,294	0,158	0,314	0,620	

Cross Loadings

Cross Loadings	EST	ICEIU	LFT	TCI	TIS	TIV	TOL	TUC
EST3	0,829							
EST4	0,838							
EST8	0,843							
EST9	0,846							
EST10	0,868							
ICE2		0,848						
ICE3		0,769						
ICE4		0,802						
ICE5		0,826						
LFT1			0,874					
LFT2			0,813					
LFT4			0,723					
TCI1				0,763				
TCI2				0,860	0,496			
TCI3				0,807	0,425			
TCI4				0,747	0,440			
TCI5				0,824	0,516			
TIS1				0,577	0,805		0,407	
TIS2					0,803			
TIS3				0,470	0,862			
TIS4					0,717			
TIV1						0,781	0,444	
TIV2						0,811	0,401	
TIV3					0,411	0,820		
TIV4						0,784	0,432	
TOL1							0,822	
TOL2						0,476	0,899	
TOL3						0,424	0,854	
TOL5				0,457		0,455	0,786	
TUC1								0,808
TUC2								0,900
TUC3								0,857

Model with Technical Support Provision

In order to create a valid model, the following items had to be removed: TOL4; TIS5; TUC4; TSP1; EST 1, 2, 5, 6, 7; ICE1.

Internal consistency reliability and convergent validity results

Construct	Indicator	Loadings	Cronbach's Alpha	Composite Reliability	AVE
TOL	TOL1	0,822	0,861	0,906	0,708
	TOL2	0,899			
	TOL3	0,854			
	TOL5	0,786			
TIV	TIV1	0,781	0,812	0,876	0,639
	TIV2	0,811			
	TIV3	0,820			
	TIV4	0,784			
TCI	TCI1	0,763	0,860	0,899	0,642
	TCI2	0,860			
	TCI3	0,807			
	TCI4	0,747			
	TCI5	0,824			
TIS	TIS1	0,805	0,810	0,875	0,637
	TIS2	0,803			
	TIS3	0,862			
	TIS4	0,717			
TUC	TUC1	0,808	0,818	0,891	0,732
	TUC2	0,900			
	TUC3	0,857			
TSP	TSP2	0,786	0,809	0,882	0,713
	TSP3	0,893			
	TSP4	0,850			
EST	EST3	0,811	0,900	0,926	0,713
	EST4	0,831			
	EST8	0,851			
	EST9	0,856			
	EST10	0,872			
ICE	ICE2	0,847	0,828	0,885	0,659
	ICE3	0,770			
	ICE4	0,802			
	ICE5	0,826			

HTMT Values

Construct	EST	ICEIU	TCI	TIS	TIV	TOL	TSP	TUC
EST								
ICEIU	0,216							
TCI	0,144	0,276						
TIS	0,148	0,228	0,654					
TIV	0,180	0,132	0,462	0,497				
TOL	0,157	0,147	0,471	0,443	0,622			
TSP	0,089	0,136	0,061	0,076	0,103	0,054		
TUC	0,082	0,048	0,459	0,294	0,158	0,314	0,139	

Cross Loadings

Cross Loadings	EST	ICEIU	TCI	TIS	TIV	TOL	TSP	TUC
EST3	0,811							
EST4	0,831							
EST8	0,851							
EST9	0,856							
EST10	0,872							
ICE2		0,847						
ICE3		0,770						
ICE4		0,802						
ICE5		0,826						
TCI1			0,763					
TCI2			0,860	0,496				
TCI3			0,807	0,425				
TCI4			0,747	0,440				
TCI5			0,824	0,516				
TIS1			0,577	0,805		0,407		
TIS2				0,803				
TIS3			0,470	0,862				
TIS4				0,717				
TIV1					0,781	0,444		

TIV2					0,811	0,401		
TIV3				0,411	0,820			
TIV4					0,784	0,432		
TOL1						0,822		
TOL2					0,476	0,899		
TOL3					0,424	0,854		
TOL5			0,457		0,455	0,786		
TSP2							0,786	
TSP3							0,893	
TSP4							0,850	
TUC1								0,808
TUC2								0,900
TUC3								0,857

Model with Involvement Facilitation

In order to create a valid model, the following items had to be removed: TOL4; TIS5; TUC4; IFT1; EST 1, 2, 5, 6, 7; ICE1.

Internal consistency reliability and convergent validity results

Construct	Indicator	Loadings	Cronbach's Alpha	Composite Reliability	AVE
TOL	TOL1	0,822	0,861	0,906	0,708
	TOL2	0,899			
	TOL3	0,855			
	TOL5	0,785			
TIV	TIV1	0,781	0,812	0,876	0,639
	TIV2	0,811			
	TIV3	0,820			
	TIV4	0,785			
TCI	TCI1	0,763	0,860	0,899	0,642
	TCI2	0,860			
	TCI3	0,809			
	TCI4	0,745			
	TCI5	0,824			
TIS	TIS1	0,801	0,810	0,875	0,638
	TIS2	0,804			
	TIS3	0,862			
	TIS4	0,720			
TUC	TUC1	0,806	0,818	0,891	0,732
	TUC2	0,900			
	TUC3	0,858			
IFT	IFT2	0,746	0,741	0,850	0,654
	IFT3	0,839			
	IFT4	0,838			
EST	EST3	0,813	0,900	0,926	0,713
	EST4	0,829			
	EST8	0,851			
	EST9	0,856			
	EST10	0,873			
ICE	ICE2	0,847	0,828	0,885	0,659
	ICE3	0,770			
	ICE4	0,802			
	ICE5	0,826			

HTMT Values

Construct	EST	ICEIU	IFT	TCI	TIS	TIV	TOL	TUC
EST								
ICEIU	0,216							
IFT	0,080	0,150						
TCI	0,144	0,276	0,167					
TIS	0,148	0,228	0,053	0,654				
TIV	0,180	0,132	0,124	0,462	0,497			
TOL	0,157	0,147	0,147	0,471	0,443	0,622		
TSC	0,197	0,234	0,171	0,893	0,872	0,804	0,837	
TUC	0,082	0,048	0,120	0,459	0,294	0,158	0,314	

Cross Loadings

Cross Loadings	EST	ICEIU_	IFT	TCI	TIS	TIV	TOL	TUC
EST3	0,813							
EST4	0,829							
EST8	0,851							
EST9	0,856							
EST10	0,873							
ICE2		0,847						
ICE3		0,770						
ICE4		0,802						
ICE5		0,826						
IFT2			0,746					
IFT3			0,839					
IFT4			0,838					
TCI1				0,763				
TCI2				0,860	0,495			
TCI3				0,809	0,424			
TCI4				0,745	0,439			
TCI5				0,824	0,515			
TIS1				0,577	0,801		0,407	
TIS2					0,804			
TIS3				0,470	0,862			
TIS4					0,720			
TIS5					0,552			
TIV1						0,781	0,444	
TIV2						0,811	0,401	
TIV3					0,411	0,820		
TIV4						0,785	0,432	
TOL1							0,822	
TOL2						0,476	0,899	
TOL3						0,424	0,855	
TOL4							0,527	
TOL5				0,457		0,455	0,785	
TUC1								0,806
TUC2								0,900
TUC3								0,858

Model with User Consultation Facilitation

In order to create a valid model, the following items had to be removed: TOL4; TIS5; TUC4; UCF2; EST 1, 2, 5, 6, 7; ICE1.

Internal consistency reliability and convergent validity results

Construct	Indicator	Loadings	Cronbach's Alpha	Composite Reliability	AVE
TOL	TOL1	0,822	0,861	0,906	0,708
	TOL2	0,899			
	TOL3	0,854			
	TOL5	0,786			
TIV	TIV1	0,781	0,812	0,876	0,639
	TIV2	0,811			
	TIV3	0,820			
	TIV4	0,784			
TCI	TCI1	0,763	0,860	0,899	0,642
	TCI2	0,860			
	TCI3	0,807			
	TCI4	0,747			
	TCI5	0,824			
TIS	TIS1	0,805	0,810	0,875	0,637
	TIS2	0,803			
	TIS3	0,862			
	TIS4	0,717			
TUC	TUC1	0,808	0,818	0,891	0,732
	TUC2	0,900			
	TUC3	0,857			
UCF	UCF1	0,731	0,882	0,917	0,735
	UCF3	0,895			
	UCF4	0,905			
	UCF5	0,886			

EST	EST3	0,812	0,900	0,926	0,714
	EST4	0,832			
	EST8	0,848			
	EST9	0,857			
	EST10	0,873			
ICE	ICE2	0,847	0,828	0,885	0,659
	ICE3	0,770			
	ICE4	0,802			
	ICE5	0,826			

HTMT Values

Construct	EST	ICEIU	TCI	TIS	TIV	TOL	TUC	UCF
EST								
ICEIU	0,216							
TCI	0,144	0,276						
TIS	0,148	0,228	0,654					
TIV	0,180	0,132	0,462	0,497				
TOL	0,157	0,147	0,471	0,443	0,622			
TUC	0,082	0,048	0,459	0,294	0,158	0,314		
UCF	0,139	0,166	0,107	0,069	0,083	0,117	0,048	

Cross Loadings

Cross Loadings	EST	ICEIU	TCI	TIS	TIV	TOL	TUC	UCF
EST3	0,812							
EST4	0,832							
EST8	0,848							
EST9	0,857							
EST10	0,873							
ICE2		0,847						
ICE3		0,770						
ICE4		0,802						
ICE5		0,826						
TCI1			0,763					
TCI2			0,860	0,496				
TCI3			0,807	0,425				
TCI4			0,747	0,440				
TCI5			0,824	0,516				
TIS1			0,577	0,805		0,407		
TIS2				0,803				
TIS3			0,470	0,862				
TIS4				0,717				
TIV1					0,781	0,444		
TIV2					0,811	0,401		
TIV3				0,411	0,820			
TIV4					0,784	0,432		
TOL1						0,822		
TOL2					0,476	0,899		
TOL3					0,424	0,854		
TOL5			0,457		0,455	0,786		
TUC1							0,808	
TUC2							0,900	
TUC3							0,857	
UCF1								0,731
UCF3								0,895
UCF4								0,905
UCF5								0,886

Appendix 3: Descriptive statistics survey items

Item	Mean	Standard deviation
COR1	4,62	0,756
COR2	2,4	0,968
COR6	3,93	1,045
COR7	4,21	0,961
COR3	1,81	0,752
COR5	5,26	1,792
COR4	4,55	2,446
COR8	3,44	0,963
TOL1	2,44	0,837
TOL2	2,31	0,804
TOL3	2,39	0,856
TOL4	2,89	1,098
TOL5	2,54	1,001
TIV1	2,14	0,94
TIV2	1,99	0,952
TIV3	1,73	0,83
TIV4	2,45	1,149
TCI1	2,27	0,991
TCI2	2,29	0,969
TCI3	2,44	0,995
TCI4	2,45	1,084
TCI5	2,13	0,835
TIS1	1,96	0,824
TIS2	2,11	0,948
TIS3	1,8	0,754
TIS4	1,49	0,559
TIS5	1,86	0,835
TUC1	3,46	0,886
TUC2	3,06	0,924
TUC3	2,74	0,845
TUC4	3,49	0,788
LFT1	3,32	0,86
LFT2	3,14	0,87
LFT3	3,48	0,82
LFT4	3,21	0,885
LFT5	3,29	0,847
TSP1	3,77	0,837
TSP2	3,73	0,82
TSP3	3,84	0,756
TSP4	3,78	0,776
IFT1	3,13	0,832
IFT2	2,41	0,733
IFT3	2,75	0,918
IFT4	2,73	0,907
UCF1	2,1	0,911
UCF2	3,02	1,182
UCF3	2,64	1,186
UCF4	2,47	0,937
UCF5	2,27	0,97
EST1	3,88	0,649
EST2	3,63	0,696
EST3	2,7	0,897
EST4	2,77	0,938
EST5	3,79	0,631
EST6	2,44	0,95
EST7	2,84	0,921
EST8	2,93	0,928
EST9	2,98	0,866
EST10	2,66	0,882
ICE1	4,23	0,645
ICE2	3,72	0,791
ICE3	3,97	0,781
ICE4	3,67	0,84
ICE5	3,65	0,8

Appendix 4: Survey questions (translation and sources)

Technostress Creators					
Techno Overload					
Code	**Final translation**	**Dutch translation**	**Parallel translation**	**English original**	**Sources**
TOL_1	Deze informatie systemen dwingen mij veel sneller te werken.	Deze technologie dwingt mij om mijn werk veel sneller te doen.	Deze technologie dwingt mij veel sneller te werken.	I am forced by this technology to work much faster.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Tarafdar et. al. 2014; Rath-Cullimore 2019; Srivastava et. al. 2015; Fuglset et. al. 2014
TOL_2	Deze informatie systemen dwingen mij om meer werk te doen dan ik aan kan.	Deze technologie dwingt mij om meer werk te doen dan ik aan kan.	Deze technologie dwingt mij om meer werk te doen dan ik aan kan.	I am forced by this technology to do more work than I can handle.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Tarafdar et. al. 2014; Rath-Cullimore 2019; Srivastava et. al. 2015; Fuglset et. al. 2014
TOL_3	Deze informatie systemen dwingen mij te werken met erg strakke planningen.	Deze technologie dwingt mij om te werken volgens strakke tijdschema's.	Deze technologie dwingt mij te werken met erg strakke planningen.	I am forced by this technology to work with very tight time schedules.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Tarafdar et. al. 2014; Rath-Cullimore 2019; Srivastava et. al. 2015; Fuglset et. al. 2014
TOL_4	Ik moet mijn werkgewoonten veranderen om me aan te passen aan nieuwe informatie systemen.	Ik wordt gedwongen mijn werkgewoonten te verandderen in aanpassing op nieuwe technologie.	Ik moet mijn werkgewoonten aanpassen vanwege nieuwe technologieën	I am forced to change my work habits to adapt to new technologies.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Tarafdar et. al. 2014; Rath-Cullimore 2019; Srivastava et. al. 2015; Fuglset et. al. 2014
TOL_5	Mijn workload is veel hoger geworden door steeds ingewikkeldere informatie systemen.	Ik heb een grotere workload als gevolg van toegenomen technologische complexiteit.	Mijn workload is veel hoger geworden door steeds ingewikkelder technologieën.	I have a higher workload because of increased technology complexity.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Tarafdar et. al. 2014; Rath-Cullimore 2019; Srivastava et. al. 2015; Fuglset et. al. 2014
Techno Invasion					
Code	**Final translation**	**Dutch translation**	**Parallel translation**	**English original**	**Sources**
TIV_1	Ik breng minder tijd door met mijn familie vanwege deze informatie systemen.	Ik breng minder tijd met mijn familie door als gevolg van deze technologie.	Ik breng minder tijd door met mijn familie vanweg deze technologie.	I spend less time with my family due to this technology.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Tarafdar et. al. 2014; Srivastava et. al 2015; Fuglset et. al. 2014
TIV_2	Door deze informatie systemen moet ik bereikbaar zijn voor werk, zelfs tijdens mijn vakantie.	Ik moet tijdens mijn vakantie in contact blijven met mijn werk als gevolg van deze technologie.	Door deze technologie moet ik bereikbaar zijn voor werk, zelfs tijdens mijn vakantie.	I have to be in touch with my work even during my vacation due to this technology.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Tarafdar et. al. 2014; Srivastava et. al. 2015; Fuglset et. al. 2014
TIV_3	Ik moet mijn vakantie en weekenden opofferen om bij te blijven met nieuwe informatie systemen.	Ik moet mijn vrije tijd opofferen om geinformeerd te blijven over nieuwe technologie.	Ik moet mijn vakantie en weekenden opofferen om bij te blijven met nieuwe technologieën.	I have to sacrifice my vacation and weekend time to keep current on new technologies.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Tarafdar et. al. 2014; Srivastava et. al 2015; Fuglset et. al. 2014
TIV_4	Ik heb het gevoel dat deze informatie systemen mijn privéleven binnendringen.	Ik heb het gevoel dat deze technologie mijn prive leven binnendringt	Ik heb het gevoel dat deze technologie mijn privéleven binnendringt.	I feel my personal life is being invaded by this technology.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Tarafdar et. al. 2014; Srivastava et. al

					2015; Fuglset et. al. 2014
Techno Complexity					
Code	**Final translation**	**Dutch translation**	**Parallel translation**	**English original**	**Sources**
TCI_1	Ik weet niet genoeg van deze informatie systemen om mijn werk naar tevredenheid te doen.	Ik weet te weinig over deze technologie om mijn werk naar behoren te kunnen doen.	Ik weet niet genoeg van deze technologie om mijn werk naar tevredenheid te doen.	I do not know enough about this technology to handle my job satisfactorily.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Tarafdar et. al. 2014; Srivastava et. al 2015; Fuglset et. al. 2014
TCI_2	Ik heb veel tijd nodig om nieuwe informatie systemen te begrijpen en gebruiken.	Ik heb veel tijd nodig om nieuwe technologie te begrijpen en gebruiken.	Ik heb lang nodig om nieuwe technologie onder te knie te krijgen en te gaan gebruiken.	I need a long time to understand and use new technologies.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Tarafdar et. al. 2014; Srivastava et. al. 2015; Fuglset et. al. 2014
TCI_3	Ik heb niet genoeg tijd om mijn technologische vaardigheden te verbeteren.	Ik heb niet genoeg tijd om te studeren en mijn technologische vaardigheden naar een hoger niveau te brengen.	Ik heb niet genoeg tijd om mijn technologische vaardigheden te verbeteren.	I do not find enough time to study and upgrade my technology skills.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Tarafdar et. al. 2014; Srivastava et. al 2015; Fuglset et. al. 2014
TCI_4	Ik vind dat nieuwe collega's meer weten over computer technologie dan ik.	Ik vind dat nieuwe collega's meer weten dan ik over computer technologie.	Ik denk dat nieuwe collega's meer weten over computer technologie dan ik.	I find new recruits to this organization know more about computer technology than I do.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Tarafdar et. al. 2014; Srivastava et. al 2015; Fuglset et. al. 2014
TCI_5	Ik vind nieuwe informatie systemen vaak te ingewikkeld om te begrijpen en te gebruiken.	Ik vind nieuwe technologie vaak te complex om te begrijpen en te gebruiken.	Ik vind nieuwe technologieën vaak te ingewikkeld om te begrijpen, of te gebruiken.	I often find it too complex for me to understand and use new technologies.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Tarafdar et. al. 2014; Srivastava et. al 2015; Fuglset et. al. 2014
Techno Insecurity					
Code	**Final translation**	**Dutch translation**	**Parallel translation**	**English original**	**Sources**
TIS_1	Ik heb het gevoel dat mijn werkzekerheid voortdurend wordt bedreigd door nieuwe informatie systemen.	Ik heb het gevoel dat mijn werkzekerheid voortdurend wordt bedreigd door nieuwe technologie.	Ik voel constante dreiging voor mijn baanzekerheid vanwege nieuwe technologieën.	I feel constant threat to my job security due to new technologies.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Tarafdar et. al. 2014; Srivastava et. al 2015; Fuglset et. al. 2014
TIS_2	Ik moet mijn vaardigheden steeds verbeteren om te voorkomen dat ik wordt vervangen.	Ik moet mijn vaardigheden voortdurend naar een hoger niveau brengen om te voorkomen dat ik wordt vervangen.	Ik moet steeds mijn vaardigheden bijhouden, anders word ik vervangen.	I have to constantly update my skills to avoid being replaced.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Tarafdar et. al. 2014; Srivastava et. al. 2015; Fuglset et. al. 2014
TIS_3	Collega's met betere technologische vaardigheden zijn een bedreiging voor mij.	Collega's met nieuwere technologische vaardigheden zijn een bedreiging voor mij.	Collega's met betere vaardigheden voor nieuwe technologie zijn een bedreiging voor mij.	I am threatened by coworkers with newer technology skills.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Tarafdar et. al. 2014; Srivastava et. al 2015; Fuglset et. al. 2014
TIS_4	Ik deel mijn kennis niet met mijn collega's uit angst om te worden vervangen.	Ik deel mijn kennis niet met mijn collega's uit angst om te worden vervangen.	Ik deel geen kennis met collega's uit angst vervangen te worden.	I do not share my knowledge with my coworkers for fear of being replaced.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Tarafdar et. al. 2014; Srivastava et. al 2015; Fuglset et. al. 2014
TIS_5	Ik heb het gevoel dat er minder kennis wordt gedeeld tussen collega's uit	Ik heb het gevoel dat er minder kennis wordt gedeeld tussen	Ik heb het gevoel dat we als collega's minder kennis delen uit angst vervangen te zullen worden.	I feel there is less sharing of knowledge among coworkers for fear of being replaced.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al.

	angst om te worden vervangen.	collega's uit angst om te worden vervangen.			2011; Tarafdar et. al. 2014; Srivastava et. al. 2015; Fuglset et. al. 2014
Techno Uncertainty					
Code	**Final translation**	**Dutch translation**	**Parallel translation**	**English original**	**Sources**
TUC_1	Er zijn steeds nieuwe ontwikkelingen in de informatie systemen die we gebruiken binnen onze organisatie.	Er zijn altijd nieuwe ontwikkelingen in de technologien die we gebruiken in onze organisatie.	Er zijn steeds nieuwe ontwikkelingen in de technologieën die we gebruiken binnen onze organisatie.	There are always new developments in the technologies we use in our organization.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Srivastava et. al. 2015; Fuglset et. al. 2014
TUC_2	De computer software binnen onze organisatie verandert steeds.	Er zijn voortdurend veranderingen in computer software in onze organisatie.	De computer software binnen onze organisatie verandert steeds.	There are constant changes in computer software in our organization.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Booker et. al. 2014; Srivastava et. al. 2015; Fuglset et. al. 2014
TUC_3	De computer hardware binnen onze organisatie verandert steeds.	Er zijn voortdurend veranderingen in computer hardware in onze organisatie.	De computer hardware binnen onze organisatie verandert steeds.	There are constant changes in computer hardware in our organization.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Srivastava et. al. 2015; Fuglset et. al. 2014
TUC_4	Er zijn regelmatig updates van de computer netwerken binnen onze organisatie.	De computer netwerken in onze organisatie worden veelvuldig gemoderniseerd.	Er zijn regelmatig updates van de computer netwerken binnen onze organisatie.	There are frequent upgrades in computer networks in our organization.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2007; Tarafdar et. al. 2011; Srivastava et. al. 2015; Fuglset et. al. 2014
Technostress Inhibitors					
Literacy Facilitation					
Code	**Final translation**	**Dutch translation**	**Parallel translation**	**English original**	**Sources**
LFT_1	Onze organisatie stimuleert kennisdeling om beter met nieuwe informatie systemen om te gaan.	Onze organisatie moedigt kennisdeling aan om het omgaan met technologie te bevorderen.	Vanuit onze organisatie wordt kennisdeling gestimuleerd om beter om te gaan met nieuwe technologie.	Our organization encourages knowledge sharing to help deal with new technology.	Ragu-Nathan et. al. 2008; Booker et. al. 2014; Fuglset et. al. 2014
LFT_2	Onze organisatie legt de nadruk op teamwork bij het omgaan met problemen gerelateerd aan nieuwe informatie systemen.	Onze organisatie legt de nadruk op samenwerking bij het omgaan met technologie gerelateerde problemen.	Vanuit onze organisatie ligt de nadurk op teamwork om om te gaan met problemen die samenhangen met nieuwe technologie.	Our organization emphasizes teamwork in dealing with new technology-related problems.	Ragu-Nathan et. al. 2008; Fuglset et. al. 2014
LFT_3	Onze organisatie biedt gebruikerstrainingen aan voordat nieuwe informatie systemen geïntroduceerd worden.	Onze organisatie voorziet in opleidingen voor eindgebruikers voordat nieuwe technologie wordt geintroduceert.	Onze organisatie biedt gebruikerstrainingen aan voordat nieuwe technologie geïntroduceerd wordt.	Our organization provides end-user training before the introduction of new technology.	Ragu-Nathan et. al. 2008; Booker et. al. 2014; Fuglset et. al. 2014
LFT_4	Onze organisatie bevordert een goede relatie tussen de IT afdeling en eindgebruikers.	Onze organisatie bevordert een goede relatie tussen IT afdeling en eindgebruikers.	Onze organisatie zorgt voor een goede verstandhouding tussen de it-afdeling en gebruikers.	Our organization fosters a good relationship between IT department and end users.	Ragu-Nathan et. al. 2008; Booker et. al. 2014; Fuglset et. al. 2014
LFT_5	Onze organisatie stelt duidelijke handleidingen over het gebruik van nieuwe informatie systemen ter beschikking aan eindgebruikers.	Onze organisatie stelt duidelijke documentatie over het gebruik van nieuwe technologien ter beschikking aan eindgebruikers.	Onze organisatie zorgt dat er duidelijke handleidingen voor nieuwe technologieën zijn voor gebruikers.	Our organization provides clear documentation to end users on using new technologies.	Ragu-Nathan et. al. 2008; Booker et. al. 2014; Fuglset et. al. 2014
Technical Support Provision					
Code	**Final translation**	**Dutch translation**	**Parallel translation**	**English original**	**Sources**
TSP_1	Onze ICT Servicedesk levert goed werk in het beantwoorden van vragen over informatie systemen.	Onze ICT Servicedesk levert goed werk in het beantwoorden van vragen over technologie.	Onze helpdesk is goed in het beantwoorden van vragen over technologie.	Our end-user help desk does a good job of answering questions about technology.	Ragu-Nathan et. al. 2008; Booker et. al. 2014; Fuglset et. al. 2014
TSP_2	Onze ICT Servicedesk is goed bemand met deskundig personeel.	Onze ICT Servicedesk is goed bemand met deskundig personeel.	Onze helpdesk heeft voldoende personeel dat ergens vanaf weet.	Our end-user help desk is well staffed by knowledgeable individuals.	Ragu-Nathan et. al. 2008; Booker et. al. 2014; Fuglset et. al. 2014
TSP_3	Onze ICT Servicedesk is makkelijk bereikbaar.	Onze ICT Servicedesk is makkelijk bereikbaar.	Onze helpdesk is goed bereikbaar.	Our end-user help desk is easily accessible.	Ragu-Nathan et. al. 2008; Fuglset et. al. 2014
TSP_4	Onze ICT Servicedesk reageert snel op verzoeken van eindgebruikers.	Onze ICT Servicedesk reageert snel op verzoeken van eindgebruikers.	Onze helpdesk reageert op gebruikersvragen.	Our end-user help desk is responsive to end-user requests.	Ragu-Nathan et. al. 2008; Booker et. al. 2014; Fuglset et. al. 2014
Involvement Facilitation					

Code	Final translation	Dutch translation	Parallel translation	English original	Sources
IFT_1	Onze organisatie moedigt eindgebruikers aan om nieuwe informatie systemen uit te proberen.	Onze organisatie moedigt eindgebruikers aan om nieuwe technologien uit te proberen.	Onze gebruikers worden gestimuleerd om nieuwe technologieën te proberen.	Our end users are encouraged to try out new technologies.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2011; Booker et. al. 2014; Fuglset et. al. 2014
IFT_2	Onze organisatie beloond eindgebruikers voor het gebruiken van nieuwe informatie systemen.	Onze organisatie beloond eindgebruikers voor het gebruiken van nieuwe technologien.	Onze gebruikers worden beloond als zij nieuwe technologieën gebruiken.	Our end users are rewarded for using new technologies.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2011; Fuglset et. al. 2014
IFT_3	Onze organisatie betrekt eindgebruikers bij verandering aan of de invoering van informatie systemen.	Onze organisatie betrekt eindgebruikers bij verandering aan of de invoering van technologie.	Wij betrekken onze gebruikers bij veranderingen in technologie en/of implementatie.	Our end users are involved in technology change and/or implementation.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2011; Booker et. al. 2014; Fuglset et. al. 2014
IFT_4	Onze organisatie raadpleegt eindgebruikers voor de introductie van nieuwe informatie systemen.	Onze organisatie raadpleegt eindgebruikers voor de introductie van nieuwe technologie.	Onze eindgebruikers worden geraadpleegd voor de introductie van nieuwe technologie.	Our end users are consulted before introduction of new technology.	Ragu-Nathan et. al. 2008; Tarafdar et. al. 2011; Booker et. al. 2014; Fuglset et. al. 2014
User Consultation Facilitation					
Code	**Final translation**	**Dutch translation**	**Parallel translation**	**English original**	**Sources**
UCF_1	Welke van de volgende keuzemogelijkheden beschrijft het best jouw indruk van de **werkelijke** mate van betrokkenheid van eindgebruikers bij het ontwerpen en ontwikkelen van informatie systemen in onze organisatie?	Welke van de volgende items beschrijft het best jouw indruk van de werkelijke mate van betrokkenheid van eindgebruikers in het ontwerpen en de doorlopende ontwikkeling van het S systeem?	Geef aan welke van de volgende onderdelen het best jouw indruk beschrijft van de mate waarin gebruikers betrokken zijn bij het ontwerp en de ontwikkeling van systeem S.	Which of the following items best describes your impressions of the actual level of user involve- ment in the design and ongoing development of the S system?	Lawrence et. al. 1993
UCF_2	Welke van de volgende keuzemogelijkheden beschrijft het best jouw indruk van de **ideale** mate van betrokkenheid van eindgebruikers bij het ontwerpen en ontwikkelen van informatie systemen in onze organisatie?	Welke van de volgende items beschrijft het best jouw indruk van de ideale mate van betrokkenheid van eindgebruikers in het ontwerpen en de doorlopende ontwikkeling van het S systeem?	Geef aan welke van de volgende onderdelen het best jouw indruk beschrijft van de ideale mate van betrokkenheid.	Which of the following items best describes your impressions of the ideal level of user involve- ment in the design and ongoing development of the S system?	Lawrence et. al. 1993
UCF_3	Welke van de volgende keuzemogelijkheden beschrijft het best de mate waarin naar jouw mening, de organisatie de eisen en meningen van eindgebruikers heeft begrepen bij het ontwerpen van informatie systemen?	Welke van de volgende items beschrijft het best de mate waarin naar jouw mening, de projectgroep de eisen en meningen van eindgebruikers heeft begrepen bij het ontwerpen van systeem S?	Geef aan welke van de volgende onderdelen het best beschrijft in hoeverre de projectgroep de behoeften en meningen van de gebruikers begreep.	Which of the following items best describes the degree to which you believe the project group understood the requirements and opinions of users in the design of the S system?	Lawrence et. al. 1993
UCF_4	Welke van de volgende keuzemogelijkheden beschrijft het best de mate waarin naar jouw mening, de organisatie serieus rekening gehouden heeft met de eisen en meningen van eindgebruikers bij het ontwerpen van informatie systemen?	Welke van de volgende items beschrijft het best de mate waarin naar jouw mening, de projectgroep serieus rekening gehouden heeft met de eisen en meningen van eindgebruikers bij het ontwerpen van systeem S?	Geef aan welke van de volgende onderdelen het best beschrijft in hoeverre de projectgroep de behoeften en meningen van de gebruikers mee heeft genomen.	Which of the following items best describes the degree to which you believe the project group seriously considered the requirements and opinions of the users in the design of the S system?	Lawrence et. al. 1993
UCF_5	Welke van de volgende keuzemogelijkheden beschrijft het best de mate waarin naar jouw mening, de organisatie eindgebruikers heeft geraadpleegd bij het ontwerpen van informatie systemen?	Welke van de volgende items beschrijft het best de mate waarin naar jouw mening, de projectgroep eindgebruikers geraadpleegd heeft bij het ontwerpen van systeem S?	Geef aan welke van de volgende onderdelen het best beschrijft in hoeverre de projectgroep volgens jou gebruikers heeft geraadpleegd bij het ontwerp van systeem S.	Which of the following items best describes the degree to which you believe the project group consulted users in the design of the S system?	Lawrence et. al. 1993
		Techno Eustress			
Eustress					
Code	**Final translation**	**Dutch translation**	**Parallel translation**	**English original**	**Sources**
EST_1	Hoe vaak kun je effectief het hoofd bieden aan stressvolle veranderingen die optreden op je werk.	Hoe vaak kun je afdoende het hoofd bieden aan stressvolle veranderingen die optreden in je academische leven	Hoe vaak verwerk je stressvolle veranderingen in je academische leven op een goede manier?	How often do you effectively cope with stressful changes that occur in your academic life?	O'Sullivan et. al. 2011
EST_2	Hoe vaak ga je succesvol om met irritant werk gerelateerd gedoe.	Hoe vaak ga je succesvol om met irriterende academisch gerelateerd gedoe	Hoe vaak ga je goed om met irritante academische gedoetjes?	How often do you deal successfully with irritating academic hassles?	O'Sullivan et. al. 2011
EST_3	Hoe vaak ben je van mening dat stress positief bijdraagt aan je vermogen om met	Hoe vaak ben je van mening dat stress positief bijdraagt aan je vermogen om met	Hoe vaak gebeurt het dat stress helpt bij het oplossen van je academische problemen?	How often do you feel that stress positively contributes to your	O'Sullivan et. al. 2011

	problemen op je werk om te gaan.	academische problemen om te gaan		ability to handle your academic problems?	
EST_4	Hoe vaak voel je je in het algemeen gemotiveerd door stress die je ervaart.	Hoe vaak voel je je in het algemeen gemotiveerd door stress die je ervaart	In het algemeen, hoe vaak komt het voor dat je gemotiveerd wordt door stress?	In general, how often do you feel motivated by your stress?	O'Sullivan et. al. 2011
EST_5	Hoe vaak ben je in het algemeen in staat om irritaties op je werk succesvol het hoofd te bieden.	Hoe vaak lukt het je in het algemeen om irritaties in je academische leven succesvol onder controle te houden	Hoe vaak ben je in het algemeen in staat om irritaties het hoofd te bieden in je academische leven?	In general, how often are you able to successfully control the irritations in your academic life?	O'Sullivan et. al. 2011
EST_6	Hoe vaak lukt het niet om een taak op je werk te volbrengen als je onder druk staat?	Hoe vaak lukt het je in het algemeen niet om een academische taak uit te voeren wanneer je onder druk staat	Hoe vaak lukt het niet om een academische taak te volbrengen als je onder druk staat?	In general, how often do you fail at an academic task when under pressure?	O'Sullivan et. al. 2011
EST_7	Hoe vaak gebeurt het dat je geen controle hebt over de tijd die je besteed aan taken op je werk.	Hoe vaak heb je in het algemeen onvoldoende controle over de manier waarop je je tijd besteed aan academische taken	Hoe vaak gebeurt het dat je geen controle hebt over de tijd die je aan schoolwerk besteedt?	In general, how often are you unable to control the way you spend your time on schoolwork?	O'Sullivan et. al. 2011
EST_8	Als je stress op je werk ervaart, hoe vaak gebeurt het dat de druk je productiever maakt?	Als je te maken hebt met academische stress, hoe vaak vind je dat de druk je productiever maakt	Als je academische stress ervaart, hoe vaak gebeurt het dan de druk je productiever maakt?	When faced with academic stress, how often do you find that the pressure makes you more productive?	O'Sullivan et. al. 2011
EST_9	Hoe vaak vind je dat je beter presteert bij het uitvoeren van een taak als je onder werk gerelateerde druk staat.	Hoe vaak vind je dat de beter presteerd bij het uitvoeren van een taak als je onder academische druk staat	Gebeurt het vaak dat je beter presteert als je onder druk staat?	How often do you feel that you perform better on an assignment when under academic pressure?	O'Sullivan et. al. 2011
EST_10	Hoe vaak vind je dat stress voor een taak op je werk een positief effect heeft op je eindresultaat.	Hoe vaak vind je dat stress voor een examen een positief effect heeft op je resultaten	Hoe vaak gebeurt het dat examenstress een positief effect heeft op het eindresultaat?	How often do you feel that stress for an exam has a positive effect on the results of your exam?	O'Sullivan et. al. 2011
Outcome					
Intentions to continue and extend IS use					
Code	**Final translation**	**Dutch translation**	**Parallel translation**	**English original**	**Sources**
ICE_1	Ik ben de intentie om mijn gebruik van informatie systemen in de nabije toekomst voort te zetten.	Ik ben volledig van plan het benutten van technologie in de nabije toekomst voort te zetten.	Ik heb de intentie om mijn gebruik van ICT in de nabije toekomst voort te zetten.	I fully intend to continue my utilization of ICT in the near future	Bhattacherjee et. al. 2001
ICE_2	Ik heb de intentie om mijn gebruik van informatie systemen in de nabije toekomst uit te breiden.	Ik ben volledig van plan het benutten van technologie in de nabije toekomst uit te breiden.	Ik heb de intentie om mijn gebruik van ICT in de nabije toekomst te verhogen.	I fully intend to increase my utilization of ICT in the near future	Fuglset et. al. 2014
ICE_3	Als het aanbod van informatie systemen in mijn organisatie wordt uitgebreid, heb ik de intentie te onderzoeken hoe ik dit kan benutten.	Als het aanbod van technologie in mijn organisatie wordt uitgebreid, ben ik van plan te onderzoeken hoe ik dit kan benutten.	Als de ict-oplossingen bij mijn afdeling begrijpelijker worden, heb ik de intentie om te gaan onderzoeken hoe ik dat zou kunnen gebruiken.	If the sample of ICT solutions at my department becomes more comprehensive, my intention is to investigate how I can utilize this	Fuglset et. al. 2014
ICE_4	Ik heb de intentie om te onderzoeken of het mogelijk is om de beschikbare informatie systemen op mijn afdeling beter te gebruiken dan ik nu doe.	Ik ben volledig van plan te onderzoeken of het mogelijk is de technologie binnen mijn organisatie beter in te zetten dan ik nu doe.	Ik heb de intentie om te onderzoeken of het mogelijk is om de beschikbare ict-applicaties bij mijn afdeling beter te gebruiken dan ik nu doe.	I fully intend to investigate if it is possible to utilize the available ICT applications at my department better than I do today	Fuglset et. al. 2014
ICE_5	Het is mijn intentie is om informatie systemen in de nabije toekomst vaker te gebruiken.	Het is mijn bedoeling om technologie vaker te benutten in de nabije toekomst.	Mijn intentie is om ict-oplossingen in de nabije toekomst vaker te gebruiken.	My intention is to utilize ICT solutions more frequently in the near future	Fuglset et. al. 2014